The Rosetta Stone of Science
Writing and Presenting in English
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中英双语版

科技英文写作与讲演

Writing and Presenting in English

科学的罗赛塔石碑

The Rosetta Stone of Science

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《科技英文写作与演讲：科学的罗赛塔石碑》

罗赛塔石碑（Rosetta Stone）发现于1799年拿破仑远征埃及时。这块石碑刻有用古希腊文字、古埃及象形文字和古埃及通俗文字三种不同语言符号表述的埃及国王托勒密五世诏书。它使得近代的考古学家得以解读出早已失传的古埃及象形文字之意义，而成为今日研究古埃及和历史的重要资料。罗赛塔石碑因此被誉为解决难题或谜语的关键线索或工具。

今天，这块巨石静静地矗立在大英博物馆中，等待着激发所有的科学家们将他们的研究成果翻译成一种能被广泛阅读的文字。

本书是一本实用指南，专为那些希望提高英语应用能力，试图润色论文使其得以发表，并欲增强国际会议演讲信心的科学家而作。它为科学家、研究人员、博士后、研究生，尤其是非英语母语的科研人员提供了十分有用的信息。

本书第一部分阐述了目前国际一流期刊所倾向使用的文体，分析了如何创建写作模板和进行编辑，并为摘要、建议书和投稿信的撰写提供了宝贵的资料。第二部分探讨了成功的科学会议演讲人所采用的各类技艺。

本书文笔简洁风趣，内容丰富，有很强的可读性和指导性。

·信息丰富　·文笔风趣　·轻松阅读

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科学的罗赛塔石碑

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序　　言

本书专门为受过正规英语说写训练的科学家所写。这些科学家的母语并非英语，而且使用英语常会让他们感觉不舒服。而对于那些已经用英语发表过研究论文，或成功地在国际会议上演讲过的科学家，这本书的内容可能太过简单。作者对此表示歉意。

在书中引用名句和谚语只是作者一时的兴致。虽然我们现在严格规范，只用清晰无误的语言来陈述科学结果，但作者仍希望，英语不会因此受到约束，继续保持它的些许优美和神秘。

佩蒂·杨

2005年8月

加拿大 温哥华 BC

Preface

This book is written specifically for scientists who have received formal education in speaking and writing English but for whom English is not a native nor an easily comfortable language. Those who have already published research in English, and those who have successfully presented at international conferences may well find the material in the book overly simplistic. The author apologizes to any such readers.

The quotations and proverbs throughout the book are at the whim of the author in the hope that English will continue to retain some of its beauty and mystery even though we now carefully discipline ourselves to present scientific results only in clear unambiguous language.

— *Petey Young*
August 2005
Vancouver BC, Canada

目　　录

Contents

1 引 言

罗赛塔石碑（Rosetta Stone）也许是这个星球上最著名的语言碑铭了，因为它曾是解读埃及象形文字之谜的关键。这个厚重而光亮的黑色石头发现于 1799 年，上面镌刻有三段用古希腊语、象形文字和古埃及通俗文字表达的文字。在这块石碑被发现后 24 年，语言学家们最终完成了对这些文字的破译工作，使得世界各地的人们能够了解古埃及的著作和文化。

（译者注：罗赛塔石碑，1799 年拿破仑远征埃及时，法军上尉 Pierre-Francois Xavier Bouchard 在尼罗河口港湾城市罗塞塔发现了此碑，自此揭开古埃及象形文字之谜。

罗赛塔石碑制作于公元前 196 年，原本是一块刻有埃及国王托勒密五世诏书的碑石，但由于这块碑石同时刻有一段文字的三种不同语言版本，使得近代的考古学家得以在对照各语言版本的内容后，解读出已经失传千余年的埃及象形文字之意义与结构，而成为今日研究古埃及和历史的重要里程碑。由于是破解埃及象形文字这种如谜般事物的起点，罗赛塔石碑也因此被誉为解决难题或谜语的关键线索或工具。）

今天，这块巨石静静地矗立在大英博物馆中，等待着激发所有的科学家将他们的研究成果翻译成一种能被广泛阅读的文字。对我们所有的人来说这是重要的，因为在每个国家所做的科学研究都值得让尽可能多的其他国家的科学家了解。

你的罗赛塔石碑上刻着的是你的母语，而你的任务就是将你的科学转化为其他人能阅读的语言——英文。讲母语的人也许会

因此觉得尴尬，但当今世界通用的语言就是英语。

英语之外的其他选择

什么？英语？为什么选择英语这种复杂、不规则、混乱芜杂的语言？可以肯定，还有其他更好的语言：

- 为什么不是德语呢？德语曾经是任何一位希望保持消息灵通的科学家必须掌握的语言。德语母语者不会像英语母语者一样在日常讲话时喃喃而语、咕哝或含糊发音。德语要求我们弯曲嘴和舌头，发出它精准的元音和辅音，让我们能够根据发音进行拼写，这是英语所缺乏的。
- 为什么不是优雅的法语呢？法语连贯、精致、元音略带忧伤，为什么不让这个世界充满流畅高贵的法语呢？
- 为什么不是阿拉伯语呢？阿拉伯语崇高、表现力强，拥有世界上最美丽的书写系统。
- 为什么不是热情而深沉的俄语呢？
- 如果科学能采用拼写容易的日语，这世界不更精彩吗？
- 或者，选择热情洋溢的西班牙语？西班牙语中微笑的 ee 发音会让你始终面带快乐。
- 或者是希伯来语，人们可以用这种语言进行长达数小时的争论。
- 也许公平地讲，我们应该选择世界语，以便世界上所有的人都具有平等的劣势。

不，抱歉，尽管有这些或那些有吸引力的语言来供选择，除非出现无法预见的政治灾难，否则这个世界仍会使用世界上最笨拙的语言——英语。也许，这是世界具有幽默本性的一种证据吧。

尽管在语言学上不符合逻辑，但英语现在已经成为科学的罗赛塔石碑，这种语言将世界各地的科学翻译成可在整个世界范围

内交流的语言。

我们中大多数人都在学校里学习过经典英语。许多人学得非常好。然而，用我们在学校里学来的英语撰写科学论文，就好像试图用此门的钥匙去打开彼门：这道门永远也打不开。今天的英语令人吃惊地不同于我们在学校里学到的英语，而且，更糟糕的是，现今英语正在以比以往任何时候都快的速度变化着（Crystal，2001）。

一点点历史和一个警告

英语一直在以惊人的速度增加新的词汇、增加新的语法、变化词义。在第二次世界大战之后，这种变化更以指数般的速度进行，自从 12 世纪到 14 世纪语言爆炸以来，从未见过这样的扩展和变化。20 世纪 40 年代，英语王国的词典里增加了这样的词汇：控制论、种族灭绝、全球化、氢弹、电视、雷达，并接受了将名词当动词的用法；20 世纪 50 年代，词典里增加了这样的词汇：反物质、仿生学、经济圈、微电路、纳秒，并借用了其他语言中的多种词汇；20 世纪 60 年代，词典里增加了这样的词汇：生物可降解、飞行时差、长寿饮食、兆字节、微芯片、夸克，以及为解决文化偏见而修饰过的词。20 世纪 70 年代，当英语的涵盖量扩大到不仅包括新技术而且还包括新的社会概念时，英语中新单词的增加速度更快了。

20 世纪 90 年代，随着因特网交流方式的出现，不可逆转地要求英语简单化，这种简单化是通过更多地接受缩写词、首字母缩略词来实现的，非字母符号如今也是常见之事，David Crystal (2001) 称之为“以计算机为媒介的交流”（computer-mediated communication）。英语一直在吸收来自其他语言的概念和随之而来的词汇，比如：大亨（tycoon）、酋长（sheik）、莎莎舞（salsa）、穆哈咖啡（mocha）、大丈夫（macho）、比萨饼（pizza）、大

草原（steppe）、牛仔竞技表演（rodeo）、空手道（karate）、沙发（sofa）、墨西哥流浪乐队（mariachi）、伏特加酒（vodka）、圣战（jihad）、毛拉（mullah）、改革（perestroika）、桑地诺主义者（Sandinista）、长袍（burka）、卡拉 OK（karaoke），等等。语言学家们还没有预测到这种发展的终点在哪里。

今日英语

今天，英语是一个迅速发展、深受因特网影响的语言。在 1997 年的版本中，保守的 *Random House Webster's College Dictionary* 在其前言中指出，英语不再是英语，既不是英国人的英语，也不是美国人的英语，而是“世界的语言”。到 2005 年，英语已经变成：

- 国际空中交通的语言；
- 外交官们最喜欢的语言；
- 因特网和万维网的通用语言；
- 世界上最好的科学家发表论文所需要的语言。

万维网的发展、电子邮件对快速和清晰交流所带来的压力加速了这种变化。时态的使用变得不再复杂，词的意义也变得不再微妙（参见第 4 章）。今天，简单的现在时和简单的过去时是最常用、最精致的时态，而容易产生误会的词如“should”，“could”，“would”，“might”，“may”，“can”的使用变得更为罕见了。

英语的特点

英语之所以成为当今的世界语言，因为它具备这样的特点：英语在接受和发明新单词方面的包容性以及在传统语法妨碍文化变化时，对语法变化的不敏感性。有关目前英语语言的变化，当

今世界上最重要的一位权威人士称之为"语言学革命"（Crystal，2001）。然而，无论这种变化是否是革命，无论我们喜欢与否，厌恶与否：英语一直在变化而且还将继续变化。它不再是我们在学校里学到的英语，或早期科学期刊上的英语。

在我们的英语训练中，更多的是鼓励我们学习如何以优雅、美丽、通常是复杂的方式写作。在学校里，我们尽最大的努力创作这样的词汇，以增加我们的文采、让老师心里高兴。不幸的是，这种方法不合今天科学期刊编辑的心意。

请不要失望。即使优雅流畅的英语不是报告研究结果的好方法，但却是写作短篇故事、小说和诗歌的极好方法。也许，英语文学作品会永远在其激动人心的书页中充满激发读者灵魂的热烈词句，诗歌里也充满着让读者在美丽中深深陶醉的昂扬词汇，但是，它们都不是报告科学研究成果的词汇。相反，服务科学的最好方式就是把它当作一盘食物，这盘食物必须小心严格地准备，并以准确的方式在盘中摆放。

今天的科学写作

今天，成功的科学写作是在一种简单、直接的方式中进行的。首先，必须精心地组织文章的章节，这不是一件容易完成的事，因为一开始有太多的东西需要同时表达；其次，每句话都必须字斟句酌，以便对那些不是你的同事的读者来说，它们的意思清楚明了。因此，你的遣词造句必须准确。

本书的写作目的是帮助那些非英语母语的科学家们超越他们所学习的繁冗语法之限制，并且：

- 将他们的科学结果翻译成当代清晰的英语；
- 写出适合发表的文章；
- 在国际会议上展示他们的思想；
- 最重要的是：让他们享受生活的快乐。

第一部分
为发表而撰写研究论文

对世界上任何一位正在从事有价值研究的科学家来说，他们都有义务向世界清楚、简明地发表其研究结果。只有当这些研究结果在全球范围内发表时，才有可能让其他地方正在做着类似研究的科学家们所了解。

本书第一部分的内容包括为发表而撰写论文的艺术，这些信息有助于你的文章在国际期刊上发表。

- 第 2 章提供一种自我分析模式，帮助你构建数据库，为你提供适合你自己写作需求的详细辅助；
- 第 3 章指导你如何成功地编辑自己的文章；
- 第 4 章解释最近主要由于因特网而发生的变化，推测即将来临的新变化；
- 第 5 章讨论文章摘要、建议书和投稿信的写作。

事实上，我们彼此在用英语说写时并不意味着我们也应该用英语思维进行思考，对未来科学发展而言，其他语言也可能有至关重要的思考模式。因此，不同国家的科学家在使用英语交流时，不要失掉自己母语里那些宝贵的东西。

2 创建模板帮助写作的艺术

当今科学写作的模式既无法在语法书中找到，因为绝大部分语法书是太早以前出版的，也无法由英语老师传授，因为教授这些英语老师的教师所使用的教材则是更早以前出版的。在今天快速变化的动态英语世界里，这些教科书式的资源没有一个有助于科技论文的写作。实际上，即使有，也只有很少一部分人受过专门为科学写作而设计的英语指导。

对知道如何为科学期刊写作的我们而言，也常常是在经历了多次的失败后慢慢地自学而成的。在学校里，老师教我们如何正确地使用语法，如何按传统、正确的英文叙述体写作。老师教我们如何使用暗示、隐喻、合成形容词和优雅的表达。我们劳心费力地写出悠长、通顺的语言来取悦我们的英文老师。不幸的是，这种类型的语言取悦不了科学编辑。

今天，科学期刊的编辑希望表达意思的语言直切主题、直接了当，词汇量越少越好，惜墨如金。他们希望言简意赅地表达每件事情，让所有的读者能清楚地理解科学。当你的研究工作发表时，世界各地的人都会读你的文章。你不仅希望读者能清楚地明白你的意思，而且还希望成为自己国家的良好代表。

今天，科学期刊会收到许多报道好的研究结果而英文写作糟糕的文章。如果英文水平实在太糟，文章会被拒绝；如果英文水平较高，那么编辑会考虑研究工作是否值得发表。如果尽管英文糟糕而研究工作看起来值得发表，那么期刊有时会对文章进行编辑让它变得能够接受，但这种做法并不常见。编辑通常的反应是

拒绝这篇论文。

科学编辑总是感叹他们缺少时间和人力来编辑期刊中的英文，因为高标准的语言水平对期刊至关重要。然而，即使他们坚持只出版好的英文，但尽快发表新研究进展的压力让他们甚至允许部分糟糕的英文出现在最好的科学期刊上。这是一件不幸的事，原因有两个：第一，每个人都希望刊登在广泛发行的期刊上的论文能被全世界的读者清楚理解；第二，没有人希望仅仅是因为英文写作不理想而使新的研究成果不能发表。目前，尽管不愿意，但部分国家或研究机构中的优秀科学家仍有可能得到糟糕英文写作的名声。希望这样的事情不要发生在你所在的国家或研究机构中。通过自学，你会写得很好，以至于将来的某一天当编辑收到来自你所在国家的作者投稿时会快乐地回应。

现在，你会问这样一个问题：我能找到一个帮助我写作的模式吗？幸运的是，这个问题很容易回答。

为你的模式寻找数据

你可能渴望在高度国际化的期刊上发表文章，而这些期刊中就含有你的模式所需要的数据。尽管这类期刊的编辑极不愿意加工任何递交给他们的英文稿件，但如果足够聪明，你就可以用编辑所长。最近发表在这些期刊上的文章都通过了编辑标准，可供你分析参考。你所要做的就是寻找那些英语母语作者最近发表在国际期刊上的文章。在这些文章中你会发现一座金矿，里面含有当代科学英语的极好信息：你在其中能找到在别处无法寻觅、与时俱进和最杰出的老师。

对一份著名的英文国际期刊来说，它的每一期至少都有几篇这样的论文：论文中至少有一位母语是英语的作者。每篇这样的文章中都含有用于写作的极好信息。它们就在你面前，等待你发挥自己的分析能力。利用这些信息可创立友好的、个性化的现代

科学写作模式，既能帮助英语不是母语的科学家，也能帮助母语为英语但文章却未能发表的科学家。

你的目标是获得文章中的语言而不是科学内容的帮助。首要的技巧是确保选择到最优秀的论文。在声誉好、知名的国际性期刊中，每篇论文的科学性都是完美的，但其语言也许不是这样。因此，如何才知道是否发现了一篇能帮助自己创建一个好模式的论文呢?

你想要寻找的文章的特点

为了保证用于分析文章所花费的时间物有所值，选择的文章必须满足三个基本特点：

- 这篇文章必须是发表在著名的国际期刊上。可以考虑的期刊应包括：《科学》(*Science*)，《自然》(*Nature*)，《生物化学》(*Biochemistry*)，《美国化学会期刊》(*Journal of the American Chemical Society*)，《应用化学(英文国际版)》(*Angewandte Chemie*，*International Edition in English*)，《物理评论》(*Physical Review*)，《科学美国人》(*Scientific American*)，以及其他你所在领域中具有崇高声誉的国际期刊。
- 这篇文章必须是最近3～5年内发表的，抱歉，不能是很早以前的文章。请记住科学的语言正在快速变化。
- 这篇文章至少有一位英语母语作者。这一点尤为重要。通常文章的第一作者对文章的写作承担最大责任，但情况并不总是如此。如果其中一位作者的母语是英语，那么可能这位作者至少负责了论文的修改。如果没有迹象显示有英语母语作者，那么从文章的语言表达中得到的数据信息很容易造成误导。

这三个条件都是必备的，以保证所选择的文章能够在语言的

使用和风格上为你提供好数据。最令人惊异的是：你并不需要关心这些文章的实际科学内容。尽管文章的内容越接近于你所做的科学，你越有可能从中更多地获得特别过程和结果的特殊表达，但这并不是你选择文章的重点。你寻找的是创建一个良好模式所需的优秀素材。

创建自己的模式

你正着手创建自己的系统，对当今成功文章中所使用的语言进行分析。幸运的是，你正好是能做这类事情的人，因为你是一位科学家，科学家具有良好的分析能力。首先，在开始研究你选择的文章时，请保持敏锐的眼光，你会发现从前不曾注意到的新东西。你将领悟：

- 科学要求直接叙述；
- 成功的文章是用尽可能少的文字讲述生动的故事；
- 最重要的是，在所有的科学表达中，清晰是关键。

你所要做的第一步是复印 1～3 篇具备上述特点的文章。第二步是着手在纸上或计算机上设计出模板，将从文章中搜集到的数据放上去。这类模板应包含以下典型数据：

- 句子长度和句子结构的变化，包括介词短语的使用频率；
- 转接、直接叙述和间接暗指的使用；
- 动词的恰当选择；
- 动词时态；
- 文章怎样开始和结束；
- 如何及何时提及其他研究人员的贡献。

模板的实际主题、所创建模板的数量将取决于你需要帮助的类型和你的英文熟练程度。他人的模板对你而言可能帮助极少或根本没用。不过，我们还是先看看以下这些对典型模板中数据类型的解释：

模板1#

这份模板可能含有文章中句子长度和句型变化的记录。比如，检查用主语开头的句子出现的频率有多少。对那些不以主语为开头的句子，应该特别注明它们是用什么词或结构开始的。立即记下吸引你的特别结构。注意介词短语的使用频率以及使用时机。你会发现你的文稿中很多不相关的介词短语是应该被删掉的。

模板2#

这份模板中可能列举并解释你在文章中发现的转折词。擅长使用转折是撰写优秀文章的关键，一名优秀的作者只会在恰当的地方使用转折。在文章使用转折的地方加上注明，并解释转折的意思如何与句子的意思吻合。检查转折的使用频率，看看相同的转折词是重复还是连贯使用。

模板3#

这份模板可能含有你发现的一系列恰当变化的动词列表，并注明它们使用时的情形。对一位科学家来说，寻找一个正确、富有变化又有趣的动词来描述研究过程是写作中遇到的最大困难。句子和段落意思的准确性可能取决于你所选择的动词。这份列表对你来说是有价值的，要使用它并不断增加新的内容。

模板4#

这份模板收录了当今期刊中惯用的动词时态。注意一般现在

时是多么频繁出现的，同时也要留心不使用一般现在时的特殊情况。当你写完论文并准备对之进行编辑时，你需要这些数据。有经验的作者往往将检查动词时态的一致性作为对将要发表的文稿进行润色的最后一步。请记住，在检查动词时态的一致性时，不要关注其他的语言问题，因为这会分散你完成一项完整工作的精力。

模板 5#

这份模板记录了你所复制的文章是如何开始与结束的。文章中最初和最后使用的词语是非常重要的，看看它们在文中是如何使用的。当完成了自己的论文后，请再次展开这份模板。这时，你会给论文找出一个比初稿更好的开头：更简单更直接。结论部分必须小心处理，因为某些作者在论文中得出的结论超过了数据支持的力度，务必要避免出现这种现象。

模板 6#

这份模板的信息价值在于，告诉你如何承认其他研究工作和其他研究人员的贡献。仔细研究你的论文，看看在文中的何时、何处、以何种方式体现了对别人的认可。你在科学界的专业声誉可能取决于你承认他人贡献的准确度。

使用你自己的模板

这些模板就是你的模式。开始使用时，你要以方便自己参考的方式来组织模板上的内容。然后，当着手写作时你需要很多信息，请时刻注意模板上所列举的特别词汇和短语（成语）。也许为了写作一篇成功的科学论文，你会扩展并完善自己的模板。保

持你的模板，使用它们。通过丰富新的信息和去除不必要的数据，让它们与时俱进。

每当遇到不知如何用语言来表达某种想法时，你的模板总会向你伸出援助之手。如果你的模板不能为你提供足够的帮助，那么认真查看一篇由英语母语作者撰写的、业已发表的文章，这会为你提供一些帮助。即使对那些没有保存这类模板的作者来说，他们也总是有自己的写作清单，记载着富有感染力的词汇和短语，并注明它们来自何处及如何使用。

第　一　稿

第一稿可部分或全部采用你最熟悉的语言来写。因为第一稿的目的是搭建文章的框架和主体，所以可以不用英文写作。在这一阶段，目的是记录下自己所有的想法，特别是建立观点间的逻辑顺序。在写完第一稿时，不管使用的是母语、还是部分或全部使用英文，你应该在其中注上帮助你撰写下一稿的私人代码。

私人代码

私人代码是你写文章时在其中放入的个性化注解。部分作者是这样做的：

- 在词语、短语和句子下方加下划线表示强调；
- 使用粗体字；
- 在句子间留下空隙，或者注上系列符号，如“*”号；
- 使用另一种语言的符号和词语。

在组织第一稿时，私人代码是你思维的一张地图，是你对自己说话的方式，告诉你需要什么帮助，但不必迫使你慢下来明确它。代码让作者在即使知道语言不完善的情况下，仍能持续写下自己的观点。

好作家知道，在写作过程中停顿下来寻找词汇或检查数据，会降低认知（或思维）的速度并妨碍在论文中组织清晰的逻辑。而且，好作家还发现如果他们在草稿的写作中不使用代码，那么在后来他们会被误导，将一句糟糕的话当作好话，然后，又漫不经心地将这句话放在最后的稿件中，给自己制造麻烦。

不管你发明的代码是什么，你的本意是在某些地方注明标记，以便在写第二稿时能容易地回到这些地方。你发明的代码应该既有正面也有反面意义。标注正面意义的符号意味着在第一稿写到这里时你有信心，你所认为的好知识点与那些需要改进的知识点同样重要。通常情况下，用计算机符号或字体作为代码在后来会比较容易确认，但部分作家是将草稿打印出来，然后再用铅笔或墨水笔加上代码。只要作者的思维地图有助于他们的改写过程，那么每种方法都是有用的。

所以，发明你自己的私人代码吧！它们一定要简单，在第一次使用时略作修改，之后就坚持使用。将这些代码写下来，以免在下次写作时忘记了它们。避免在两次草稿间大幅改变你的代码或系统。这些改变可能会导致代码最终给你帮倒忙。

组织思路

按什么逻辑顺序来呈现自己的想法是决定论文成功与否的基础。努力让自己在动手写作前就在大脑里形成思路。这句话听起来容易做起来难。对一篇科学论文的写作来说，组织清晰、易懂的思路不是一件容易的事，因为有太多的东西需要同时表达。然而，这些东西不能被同时表达，因此毫无疑问，这是第一稿写作中最困难的地方，又是你在写作前就需要解决的问题。如果你没有解决这个问题，那么你可能在一篇研究论文的写作中犯下最严重的错误，也就是说你的论文中可能含有重复的东西。

为了构建一个清楚、准确又没有重复的顺序，你可能要考虑

使用一种名为“节目播出顺序表（story board)”的写作前技术，新闻记者和侦探们常使用这种技术。在这种技术中，每个想法都被单独写在索引卡、纸片上或贴纸上。索引卡是最通用的：在寻找最佳逻辑时，它们的顺序可被安排和调整。这些卡片还可放在衣袋里，让你反复评估自己的逻辑直至你真正认为这个顺序足够好，可以开始写第一稿了。当使用纸片或小贴纸时，可以将它们贴在墙上，选择你或者是你和同事两个人都认可的一个好的顺序。这时，你需要给卡片或小纸片写上编码，并在上面写上对你写作有帮助的关键词。可能将每个想法放进不规范的句子里，但在句子间排序并不是一件重要的事。重要的是要组织这样一个合理的顺序：每个思想都不会重复、每个事件都有其内在的逻辑顺序。

完成第一稿

在第一稿中，你可能在细节方面下的功夫不多，比如采用适当的词语，避免重复用语，检查时态，评估转折词的使用等。不管它，每当你担心自己可能没有做出一个好的选择时，在这些地方使用自己的私人代码，再继续前进。现在，你完成了第一稿，这远不是最后的定稿，但仍然是一份你值得骄傲的成就。在开始写作第二稿前休息几个小时或一个晚上。你需要让自己的思绪休息一会，并有机会进行全面观察，但不要让自己等得太久，否则你会忘了在写作第一稿时形成的思想。

有很多稿件因为以下四个方面不足而被拒。在写作第一稿前，检查你的计划中有没有这些致命的错误：

- 原稿内容过于宽泛。这些材料应该用在 2～3 篇论文中，然后再投稿；
- 原稿中声称的结果超过了所给数据的支持力度；
- 原稿过长，包含不必要的细节，如对历史过程的回顾或冗

词赘句；

- 作者没有恰如其分地承认他人的贡献。

第 二 稿

你在第一稿中已经建立起思想或事件的顺序。现在，你要用段落来帮助读者理解你的顺序划分。接下来，检查你在第一稿中标记代码的地方。将非英文词语换为英文，推敲有问题的地方。让你的模板来帮助你。按你最喜欢的顺序使用这些模板，用每个数据仔细检查全文，并随时准备重写。

即使对一个英语为母语、技巧高超的作家来说，也不可能在初稿中就完成一篇成功的论文。所有准备投递期刊的成功论文都是经历了几易其稿的过程。在每一份草稿中你都会回过头仔细看你的模板上的信息，检查、再检查，甚至重写。也许，你的模板没有包含足够多的信息，还需要仔细再看看所复印的论文以求进一步的帮助。

在接下来的所有草稿中，费心最多的是将第一稿转换成简单、直接的英语句子。保持句子的短小和直截了当。一位学识渊博的澳大利亚新闻编辑曾经说过：一个复杂的句子就像一个压缩的分子。因此，抵制所有试图写长句或优美句子的诱惑：你可以在后来让句子变长；你可以在后来让句子变得更加优雅；你可以在后来想方设法加上转折词让句子更加通顺。但让你的思想更加直接和简单才是最重要的。记住：世界各地的科学家们都在迫切希望能理解你的报告。帮帮他们吧！在科学家与科学家之间，直接而简单地讲话。

这时你不要担心自己的写作看起来可能太简单。从某种意义来说，你希望自己的写作简单化，因为简单意味着清楚，你希望每个人都能明白你所写的东西。当你继续花大力气编辑你的最后一稿时，你可能在词汇、转折和句子结构上有更多的选择，让自

己的文章更通顺、更有趣。你的主要目的是确保每句话中的意思：

- 对你所在领域的科学家来说是清楚的；
- 恰如其分地提及做出贡献的人；
- 没有令读者生厌的，与文章主题没有直接关系的历史或其他细节；
- 没有因过分解释显而易见的问题而冒犯读者的智力。

最后一稿

现在，编辑最后一稿，努力让它如你想象般美好。你已经准备好实践编辑的艺术了。

3 编辑自己作品的艺术

谁能提供编辑方面的帮助？当然不是科技期刊的编辑：期刊的编辑人员不提供这方面的服务，通常情况下，编辑只要发现稿件的语言风格不符合期刊的要求，就会将稿件退回。在如此简单退稿的情况下，作者如果能得到一些建议的话，则可能是建议作者为稿件寻求语言帮助。

这种结果的影响如何？作者能做些什么？首先，许多业余作者或新手的写作风格过于个性化。无论如何评说他们的写作，都只是针对他们作为一个科学家个体而言的。请不要这样做，因为如果采用这种写作方式，就永远写不出能够达到发表要求的稿件。写作的质量不能反映作者的智慧，也不能反映作者作为一个科学家的价值，只是作者写作技巧的体现。

其次，稿件的作者需要认识到自己所撰写的内容是一个产品：这个产品就如同于一位面包师混合制作并烘烤出的一块蛋糕。蛋糕的好坏取决于各种配料的质量、数量、加料次序和柔软的触感。一旦烘烤出好的蛋糕，我们会祝贺面包师。然而，当烘烤出的蛋糕不好的时候，我们不会认为面包师的人品不好，充其量会认为其是出自一位技艺欠佳的面包师之手。欲使一篇稿件得到发表，作者就要必须学会与同事一起反复编辑自己的稿件，并且要认真地编辑，否则就不如不写。也就是说，努力制作一块蛋糕。

第三，要牢记写作是一项社会活动。即便是独立写作，写作也是一项社会活动，因为作者永远是在为读者写作，寻求读者的

理解。作者需要确认他所写文章中的每一个观点都能被读者所了解。

寻求编辑帮助

应该如何寻求编辑帮助？职业编辑不是科学家并且对论文中的科学内容不熟悉，因此，他们的编辑改动可能极不可信。职业编辑对于新闻报道、散文、小说和个人通信的编辑加工可能十分擅长，但对于科技期刊中研究论文的语言表达形式并不通晓。其他致力于科学的服务人员通常也不会更有帮助，因为他们通常也缺乏作者所在某特定研究领域的专业知识。因此，要记住，当来自某个专业性的编辑服务的建议与作者本人的模板（spreadsheets）产生分歧时，应相信模板（有关模板的信息参见第 2 章）。

作者需要获得相关的帮助以编辑好论文。很少有作者能独立地编辑自己的论文，实际上甚至很少有作者能独立地撰写自己的论文。他们以团队形式撰写并且在编辑方面互相帮助。英语很难驾驭，作者需要他人给予帮助。大多数作者与同事一起进行编辑工作，然而，同时与两位以上的同事合作所产生的混乱可能要多于帮助。

一定要慎重地选择参与写作或编辑的合作者。作者与合作者之间要相互了解和信任，以确保对稿件评注和质疑时不带有个人情绪，并且牢记所有的建议都是旨在提高论文的科学表达质量。同样，合作者应该信任作者：他们应该相信作者不会因为他们的建议而感到自己受到冒犯。

最好与自己的研究同仁（而不是自己的上司或下属）一起建立一个相互信赖的编辑体系，理想的情况是寻求一位或多位正在撰写论文的同仁以便组成能够互相提供编辑帮助的作者团队。如今，电脑使得身处不同机构的研究人员能够协同写作和编辑，从而创造了比以往任何时候都更优越的合作撰写和完善编辑的条件。

尽可能利用在合作者所在机构参加会议或喝咖啡的机会与合作者会面，因为成功而及时的编辑工作所需的坦率和信任，需要友谊来维系。作者应牢记只有下列人员才会对自己有所帮助：

- 信任作者并且坦率地指出稿件中的长处与不足；
- 有能力提出正面的肯定意见和负面的批评意见；
- 对作者比较熟悉和了解；
- 熟悉作者拟投稿期刊的写作风格。

组建一个写作与编辑团队可能十分困难，需要通过个人和专业方面的努力才能达到工作的和谐。无论如何，写作是一项社会性很强的活动，作者无法从不了解自己或不了解自己的研究的那些人中获得所需要的帮助。

删除不必要的词语

就其语法来说，英语是一种冗长的语言，作者如果期望获得尊重并显示对读者的尊重，就应尽量避免使用所有不必要的词语，这就意味着作者在编辑时应当删除任何不必要的单词、句子和短语。

重复与冗余

编辑指出，重复（直接地重复使用同一单词）和冗余（间接地重复可替换使用的短语或近义词）是退稿中常见的缺陷，这些缺陷在非英语母语作者的稿件中尤其常见。

遗憾的是重复表达越来越为科技期刊所不能容忍。可以理解的是，重复是一个很容易陷入的语言陷阱，因为英语有十分丰富的近义词，并且有难以计数的句法结构可以用来表达同样的思想。因此，作者很容易相信自己不是在重复阐述，而只是在强调自己的观点，以使得这些论点的表达更为清楚。然而，编辑一眼

就能看出各种形式的重复，并且不会欣赏任何形式的重复表达。

作者一次只能阐述一个观点。应该仔细选择简洁的语言清楚有效地表达论点，但只能阐述一次。无论如何重要、如何复杂、如何创新的观点，在同一篇研究论文中都不应反复阐述。惟一可以接受的是在论文最后的总结中不加详细解释地简要复述重要信息。

冗词

重复使用同一个非科学性的单词（尤其是动词）会使稿件显得乏味。应该使用其他具有同样含义甚至更准确的单词来代替。这种替换可以针对所有非科学性的单词来开展，可以使用电脑搜索一下稿件，看看自己所喜好的单词或短语出现的频率。

注意，使用分类词典来寻找可替换的单词是危险的。英语太微妙并且太复杂，因此分类词典不是一个可靠的工具。作者的可靠信息只能源于模板和所复印的范文。如果上述两者都没有所需求的词汇，就参考其他由英语母语作者最近所发表的文章，并复印这些论文，将其中的相关信息加入到自己的模板中。

最后的提醒：如果稿件中使用了引人入胜的、有趣的单词或短语，则要留意这些词语的使用不应超过一次。这类单词或短语是文字中的香料，尽管好但很惹眼。因此应设置电脑搜寻每一个该类词语，将其置于最有效的地方，并且只使用一次。

多余的解释或描述

在研究论文中，多余语言的一个重要形式是以附加信息出现，这种附加信息就写作本身来说令人感兴趣，但与论文所报道的结果无关。通过认真运用模板，可以消除这类冗长的解释，如果没有通过模板很好地控制这类问题，就需要浏览全文以确保稿

件中避免出现以下各点：

- 介绍研究背景或历史的篇幅超过拟投稿期刊的要求；
- 对研究工作的介绍过于详细，甚至详细介绍不必要的工作；
- 关于你的研究小组其他研究工作的信息。

介词短语

多余解释的另一个常见形式是滥用介词词组，例如，在研究工作开展的地点对读者来说很明显时仍使用“in our laboratory”。要留意诸如下列的多余的介词短语：“by the researcher”，“during the research”，“on the table”，“in this group”。在编辑时删除所有不相关的诸如此类的介词短语。作者应注意到从所复印的范文中很难采集到这类词。

被动语态

现代科技写作越来越直截了当，对被动语态的使用正在快速消失。检查一下模板或复印的范文，看看是否使用了动词的被动语态。尽可能将所检查到的被动语态改为主动语态。期刊都推崇主动语态和直截了当的陈述。

作者需要检查定稿中以下列单词开始的句子：

- There are...
- There is...
- There was...
- There were...
- There has been...
- There have been...

并且还要检查以通常没有指代意义的“It”开始的所有句子：

- It was...
- It is...
- It has been...

被动结构是人们熟悉且容易使用的结构，该结构可以帮助作者自由地写作，因此，在初稿中作者可采用被动结构。然而在编辑时应修改这些结构，以使得每个句子的内容能够更快捷地被读者理解。直接陈述作者所要表述的内容可使得论文的表达更为有力，这样的论文也更可能会被接收发表（表 3.1 列举了如何改写以“It”开始的句子）。

表 3.1 未发表稿件中迂回或非必要语言举例

迂回的语言	直截了当且清楚的语言
It will be the end of the year before we **can** expect results **to be ready.**	We expect results by the end of the year.
It was discovered **in our laboratories** that sulfur dichloride reacts with...	We discovered sulfur dichloride reacts with...
It is vital to recognize **the importance of the** variance among lengths of multiple bonds.	Recognizing variance in the length of multiple bonds is vital.
It is very important **to realize** that the **aforementioned** results are...	The results are important because...
If my group **had been able to**, we **would have** prepared the compound but...	We have not prepared the compound because...
There have been recent developments in NMR which allow...	Recent developments in NMR allow...
There are three molecular orbitals, **namely**, (1)... (2)... (3)...	The three molecular orbitals are: (1)... (2)... (3)

使用加强语以强调内容

当作者避免使用诸如“really”，“actually”，“truly”等附加的加强语时，论文中信息的传递效果会更强。上述加强语给研究论文增加了近乎不可信的成分。这类词属于叙事类的文字，如果出现在科技论文中可能使读者产生怀疑。核查所复印的范文中是否出现过这类词汇。最好的建议是在最后的编辑时删除它们。这些词可以比较好地用于社会科学，甚至较好地用于专业信件，却不能用在研究论文中。尽管听起来似乎奇怪，但当论文中删除这些含糊的加强语时，反而可加强科学观点的陈述力度。

单词“Very”

“Very”是每个作者都应该避免使用的单词。尽管“Very”是一个意思清楚的加强语，但因为太多地被使用以至于基本上没有实际意义。由于“Very”太常见，因此论文中如果不用该词，表达会更为有力。在需要强调的地方使用诸如“extremely”，“highly”，“strongly”，“surprisingly”的加强语会更为有效，但是请间或使用所有这些加强语，否则会损失其强调效果和论文的科学性。

其他过度使用的单词

稿件中应避免使用其他过度使用的单词，否则会降低信息的表达效果。用有具体含义的单词代替诸如“a lot”和“many”之类的单词。科学家应寻求使用具特指含义的单词。

此外，删除具有判断含义的单词，如“good”或“nice”，也可提高单词的表达效果。避免使用赞美之词，代之以解释。好的

科学在于解释而不是赞美。

惊叹号

惊叹号很少用，如果在专业写作中出现也肯定不是在研究论文中。作者应该通过仔细选择词汇来清楚地表达自己的重点内容。有些语种的科技写作中使用惊叹号。英语不使用。

作者应记住如果稿件中保留有惊叹号，期刊的编辑将会将其删除，因此作者最好自己把惊叹号删除掉。此外，应检查模板和所复印的范文，注意其中是否包含有惊叹号。

陈腐词语

小心陈腐词语。陈腐词语是过度使用的术语，在英语中是不受欢迎的。尽管陈腐词语看起来很有趣，而且使用它会让人觉得作者的英语很地道，但还是不要使用它们。与相应的简单而直接的单词比较起来，陈腐词语的表达效果相当差。

陈腐词语在许多语言中是有用的，并且在有些语言中颇受青睐，但这些在英语中曾经新颖的单词现在是没有新意的。在英语的动态和不断演进中，陈腐词语很快就变得过时，使用它不仅会分散读者的注意力，在某些场合甚至会招来读者的嘲笑。

人们非常熟悉以至于成为陈腐词的术语在非正式交流中有些作用，但不能用于科技写作。甚至在谈话中重复使用人们熟悉的描述性短语也是非常不受欢迎或被认为是不礼貌的。英语母语者会因为一位说话者（尤其是一位作者）使用人们非常熟悉的、过时的、描述性的短语而感到窘迫。这类短语可能显得有点孩子气并且使用者可能会被认为欠缺老练。在研究论文中用陈腐词语是不合适的。表 3.2 列举了从某些未发表论文中撷取的一些陈腐词语，这些陈腐词语以下划线标出。

妙　语

不可将陈腐词和妙语混为一谈。学术妙语在好的科技论文中是有很高价值的。然而，对妙语的成功使用需要十分丰富的英语语言知识和对英语的熟练使用，并且与避免使用冗词和灵活选择单词密不可分。

研究论文有限的篇幅及相关要求很少能使妙语有发挥的余地，即使对于专家也是如此。遗憾的是妙语实际上取决于文化，即科学文化与英语语言文化的完美结合。妙语的使用确实很难。

表 3.2　未发表论文中不合适的陈腐词与冗词举例

不合适	合　适
Attempting **to do** this was **like trying to put a square peg in a round hole...**	Attempting this was difficult because...
In high hopes we **studied** the spectrometer printout and found...	Results of the spectrometer reading indicate...
Darwin's **tried and true** method of...	Darwin's method of...
We believe that **sooner or later** these results will...	We believe that these results will...
We are pleased to be able to report that the structure...	The structure is...
The findings **of the results of the study** show... **that** the end product **has** indicated...	The end product indicates...
The product is **black as coal**...	The product is an intense black color.
This result is **the cherry on top.**	This result adds to the evidence that...
This result is **beyond our wildest dreams.**	This result encourages us that...

转 接 词

转接词或短语在句内和句间的作用十分重要。然而，对转接词的过度使用会降低最后定稿的表达质量。在初稿中可以随心所欲地使用转接词，因为转接词有助于引导作者缜密地思考。但是，在定稿中作者需要仔细检查：

- 稿件中使用了多少转接词；
- 转接词的使用是否必要。

"润滑剂"

有些转接词或短语的作用相当于润滑剂：它们在作者期望有逻辑联系的句间起着润滑作用。虽然某个转接词或短语在内容方面并不需要，但其作为润滑剂的合理使用有助于读者理解作者的思维逻辑。润滑剂的使用对于大多数作者来说比较容易并且自然。然而，润滑剂的过度使用会有损论文的表达质量，并且造成读者的分心。可研读所复印的范文并揣摩成功的作者如何使用作为润滑剂的转接词或短语（图 3.1）。

图 3.1　"润滑剂"：起逻辑演进作用的转接词

- furthermore
- in addition
- first, second, third 等（旧时用法：firstly, secondly, thirdly 等）
- finally
- lastly
- moreover
- incidentally
- in fact
- in truth
- as a matter of fact
- for example
- such as
- next
- then

“对比”

当句子或段落与已表述的观点在逻辑上呈对照关系时，就需要借助转接词或短语的功能。这些转接词或短语很少具可选择性（图 3.2），它们的作用是提醒读者逻辑演进的方向即将改变。

图 3.2　“对比”：表示逻辑演进方向即将改变的转接词

- but
- however
- instead
- nevertheless
- despite
- surprisingly
- in spite of
- in contrast
- for comparison

“解释”

解释即转接词用于提示原因和结果。这些转接词有时可选择使用并且通常出现在句子的中间。它们对于指示作者即将阐述的结果或结论十分重要（图 3.3）。

图 3.3　“解释”：用于指示原因和结果的转接词

- because
- as a result
- therefore
- in general
- consequently
- as predicted
- in conclusion
- since
- as
- for
- finally

转接词编辑指南

有助于转接词编辑的三条总体指南：

- 如果英语母语作者在其发表于知名期刊的论文中使用某转接词，则该转接词可能是好的选择；
- 转接词或短语的作用是帮助读者清楚地理解，这也是转接词的惟一作用；
- 如果在一页的正文中使用转接词超过 10～12 次，则很可能干扰而不是帮助读者的理解。

过时的转接词

已经过时的转接词包括“as was mentioned earlier”，“the aforementioned”，“the authors would like to say”等术语，这些术语旨在提醒读者相关内容已经阐述或即将阐述。目前认为，这些过时的术语在某种程度上会冒犯读者并干扰读者的理解，应避免使用。

动词时态的编辑

最后的并且最乏味的编辑工作是检查论文中每个动词的时态，以确保一致性和连贯性。该项工作应在其他所有修改与编辑工作结束以后开始。在最后的动词时态的检查过程中，不要因为稿件中任何其他问题而中断。即便是英语教师，在时态检查工作中如果因为其他工作而分心，也会很容易忽视时态的连贯性。

现在时

一般现在时

当前科技写作中最常见的时态是一般现在时。所有的研究结果，无论是今天还是数年前所获得的，都以现在时表达。一般现在时表示研究结果为同样的实验可以重复的一般性事实。与此对应的是，如果使用过去时则表示研究结果可能不是一般性事实。

核查模板和复印的范文，看看其中的动词在什么情况下不采用一般现在时形式。把这些例子加入到模板中，并在旁边注明使用非正常时态的理由。应尽量使用一般现在时。

现在进行时

非英语母语者尤其要慎重使用现在进行时（即：to be + -ing)。非英语母语者远比英语母语作者倾向于使用现在进行时。现在进行时可以较好地用于对话、记叙文和信件中，但很少用于专业写作或科技写作中。在极少见的情况下（当需要强调当前正在进行的事件时）可使用现在进行时。

现在完成时

在研究论文中使用现在完成时不仅正确而且十分精彩。然而论文中很少需要使用现在完成时，并且使用这一时态确实比使用其他简单时态需要具有更多的语言知识（表 3.1，表 3.3)。

过去时

过去时也常用于科技写作，但只限于某些特定的情况。

一般过去时

过去时用于表达实验室工作中已经完成的部分。在研究论文中，一般过去时用于阐述不适于使用一般现在时所表达的工作。其他有关一般过去时的用法不再常见，作者应该核查模板和复印的范文以获取更多的相关信息（表 3.3）。

表 3.3　未发表论文中不合适的时态举例

不合适的时态	倾向于使用的时态
Sodium **is reacting** with water	Sodium **reacts** with water
Sodium **reacted** with water	Sodium **reacts** with water
The results **are showing** that...	The results **show** that...
Results **showed** that...	Results **show** that...
Our group **has been proposing that...**	We **propose** that...
Some researchers **are arguing** that...	Some researchers **argue** that...

过去完成时

过去完成时可能也合适，但是一般过去时通常更妥当并且更为合适。

过去进行时

核查一下模板和所复印的范文，找出英语母语作者在其最近发表的科技论文中很好地使用了过去进行时的例子。你会发现，过去进行时极少见并且通常是不必要的。

科技论文中的语态

恭喜，你已经完成了对稿件的语言润色：你已经修改了句子、评估了转接词的使用、删除了多余的语言、优化了词汇、检查了时态的连贯性。你的读者可以信赖你准确的文字表达，因为

对于世界上所有不了解你的实验工作的科学家来说，你已经把你的信息表达清楚了。

- 应牢记：作者如果忘记了读者就会自担风险；
- 稿件应使用科学的语言来表达。

4 与变革共舞的艺术

大多数英语母语者都认为他们所说和所写的是“标准英语”或“女王英语”，或至少是“好英语”。然而，即使威尔士的语言学家，世界上最受尊重的、仍在世的英语权威 David Crystal 先生也认为，不存在“标准英语”、“女王英语”和“好英语”，字典、书、口语中均不存在。实际上所有英语母语者所说和所写都存在着地区性差别。这些不同地区的每一个对白都被英语国家受过教育的人称为“标准英语”或“女王英语”，也就是“好英语”。这些不同地区的英语就好比各种各样的鱼一直游弋于黑不见光的水中，从来也不可能逮住一条并宣称“这是一条正规的鱼”。

在当前的国际交流中北美英语似乎胜过英国英语。这种情况的出现可能归因于其经济和技术优势，但也可能简单地归因于人口数量。美国的人口是英国人口的 4 至 5 倍，因此，仅基于此我们就可以料想美国英语会有更多的变革。在不久的将来，国际上使用英语交流的人数会超过美、英人口的总和。如果使用者的数量会影响语言的变化，那么英语可能会因为来自许多其他文化背景的使用者的加入而经历极快的变化。

国际英语的趋势

自万维网（World Wide Web）出现以来，人们一直迫切需要与其他国家进行快捷而有效的交流。在世界范围内致力于提高交流的情况下，我们才不得不建立也许被称之为国际英语的语言。

在19世纪，美洲印第安部族的一位切诺基（Cherokee）土人部落酋长称英语为欺骗的语言。这种说法在某种程度上是真实的，在科学中的英语并不具备突出的价值特点。

世界各地的科学家期望使用一种没有歧义的语言来传达或接收信息。科学家欢迎能够使英语更加国际化、更清楚的变革，因为没有任何一个领域像科学界一样需要一种直接而简单的国际性语言。

英国英语与美国英语的差异正在消失

在向世界性语言演变的过程中，英国英语和美国英语的差别正在快速消失。虽然有些单词的拼写在词典中存在差别，如“lorry”/“truck”，“torch”/“flashlight”，“boot”/“trunk”，“pudding”/“dessert”，“pram”/“baby buggy”，“nappy”/“diaper”，“sweet”/“candy”，“biscuit”/“cookie”，“wallet”/“billfold”等，但这些词通常不出现在科技论文中。

英国英语和美国英语之间的语法差异已很少见了。拼写差别仍然明显，但这些差别也因为因特网的影响而正在快速消失。

拼写

在世界上的多数英语使用者中，北美英语的拼写较英国英语的拼写更为常见。浏览一下拟投稿的期刊，看看这种期刊倾向于何种拼写。只要保持一致性，采用何种拼写方式并不重要。期刊并不会因为作者采用英国英语拼写而不是北美英语拼写而退稿，反之亦然。

表4.1为部分目前仍保留的拼写差异，不过这些差异已不足为虑，因为利用文字处理软件可以很容易地查找并修改。

表 4.1 部分英国英语与北美英语的拼写差异

英国英语	北美英语
• advertize，advertizement	• advertise，advertisement
• aluminium	• aluminum
• analogue，catalogue，dialogue	• analog，catalog，dialog
• cancelled，cancelling	• canceled，canceling
• centre	• center
• cheque	• check
• colour，honour，labour，valour，humour	• color，honor，labor，valor，humor
• favour，favourable	• favor，favorable
• focussed，focussing	• focused，focusing
• gaol	• jail
• enquiry	• inquiry
• inflexion	• inflection
• jewellery	• jewelry
• licence	• license
• litre	• liter
• practise	• practice
• manoeuvre	• maneuver
• neighbour	• neighbor
• organise	• organize
• sceptical	• skeptical
• specialise	• specialize
• sulphur	• sulfur
• theatre	• theater
• travelled，travelling	• traveled，traveling
• tyre	• tire
• vigour	• vigor

文体

英国英语的文体比北美英语的文体更为正式。读者很少注意论著中文体的差别，因为文体差别在文笔较好的科技论文中并不明显。然而，在投稿信、介绍信及同行间的通信中，文体差异可能影响到作者叙事时的选词和用词（见第 5 章信件举例）。

美国英语中更少使用委婉、含糊的动词，如“could”，“would”，“should”，“might”，“can”，“may”这些词很难把握。有时它们可互换使用，有时则不能。无论如何，这些词很容易使作者词不达意，这些助动词的意思难以把握并且取决于语境。这些词的使用可以增加私人信件和投稿信的优雅，但这需要作者对英语高度理解和把握。在有疑惑的时候，就使用简单的动词代替带助动词的动词。

在私人通信中美国英语相比英国英语更随意。例如，尤其在美语中，“whom”和“shall”通常用“who”和“will”代替，“among”和“between”的差异通常被忽视，并且宾语可能与传统上要求的动-宾一致不相符。这种趋向能走多远尚未可知，但语法确实值得简化。

当前私人信件中北美英语的文体通常比较活泼甚至不礼貌。可根据所收到的信件创建模板，以供使用时选择所需要的文体。注意北美英语倾向于使用新习语。这些习语有时似乎吸引人，但它们会很快过时并且意思变化很快，以致对你帮助无几，应避免使用。最安全的是不受诱惑，不要追求像有些美国人那样写非正式英语。

口语中正在改变的地方

传统上，我们都喜欢那种能够通过学习掌握的、可靠的语法。英语可不是这样。英语比较令人沮丧的特点之一应该是其自由性，看上去必须采用的语段可以另作他用。然而，这也正是英语的一个光彩之处。英语比其他语种更具有弹性，因为英语句法可以很容易地适应于新的内容并赋予其新的含义。

名词充当动词／名词充当形容词

现如今，名词甚至无需改变形式即可由名词转化为动词或形

容词。例如，我们可以使用 get email，email someone，以及 get email letters；我们可以使用 work in an office，office with someone，use office supplies。没有其他语言具有如此——有些人认为是令人痛恨的——弹性。当在科技论文中发现这类趋势的实例时，可在 2000 年或更晚出版的词典中查检其词义。如果能查询到，就将其加入到自己的模板中。

形容词充当副词

美国人趋向于用副词代之以形容词。在该用“well”的地方使用“good”已成为习惯，其他还有“different”代替“differently”，或“slow”代替“slowly”。将来这种用法的普遍性如何，或是否能被接受，尚未可知。到目前为止它们仍被认为是不正确的用法。

趋向于更为快捷和直接的交流

国际英语趋向于更为快捷和直接的交流。许多人可能发现某些恼人的语言应用的新趋势能够很快得到广泛认可。科技期刊中这种趋势的一个重要部分是采用一般现在时的主动语态代替被动语态，使信息的主体得到直接而快捷的表达。可以参见表 3.2，体会一下右栏中一般现在时主动语态的句子是否比左栏中进行时被动语态的句子更能容易而快速地被人理解。

标点符号

当代英语比传统英语更少使用标点符号。句间需要标点符号的状况正在改变，因此，如果对此犹疑不定时，查询一下模板和所复印的范文。总之是向简单化的趋势改变。

大写字母

英语中的大写字母100多年以来一直在减少。早在20世纪，具抽象特征的词，如“love”，“nature”，“strength”，“loyalty”，“beauty”等，就不再实行大写。紧接着是表示季节的词汇，“winter”，“spring”，“summer”，“fall”，不用大写字母表示。然后是诸如“university”，“professor”，“doctor”，“chemistry”的词汇不再大写，不过用于名称时除外，如“Kyoto University”，“Professor Dreiss”，“Dr. Lee”，“Chemistry Department”。

我们只能推测下一个被认为是不必要并且将消失的大写字母是哪些。人们可能吃惊仅仅自高自大的单数第一人称“I”是大写，而其他人称代词则没有了如此待遇。可以肯定的是，令人难堪的反身代词“I”也会终结其大写。

很少有某个新的发现或技术事件令人如此震惊以至于可以像Internet一样被授予大写字母：Internet是一个值得用“I”的特殊事物！尽管Internet在21世纪初出版的字典中保持着大写字母，但如果大写字母不断减少的趋势继续的话，很快我们将发现“internet”不再大写。相似地，当前倾向于表示为“World Wide Web”也许即将被写作“world wide web”。

连字符

目前的趋势是删减连字符，除非是使用两个单词构建一个形容词，如：“English-speaking person”，“panic-stricken person”。我们熟知的一些词，如“co-operation”/“re-unification”，已变化为“cooperation”/“reunification”，甚至当初认为看上去太奇怪或难以发音的单词，如“reestablish”，也已成为正确的形式。当代的趋势是合并原来的拼写形式为单一的单词。

逗号

现在的趋势是越来越少地使用逗号。只有当从句或短语不是

出现在句子中所期望的位置或者因为要分隔一系列条目时，才需要使用逗号。大多数科技论著的作者都同意在一系列条目的"and"前加逗号。

首字母缩略词和缩写词

英语，尤其是科技英语，已快速地趋向于接受首字母缩略词和缩写词。这似乎是英语向更为快速地识别和理解演变的一部分。要注意，大脑的理解速度远比眼睛浏览印刷品的速度快。

直到不久前，首字母缩略词中每个字母后面还使用一个缩写点。这个缩写点（实心句点/圆点）的使用最初是可用可不用，现在已不用了。取而代之的是，首字母缩略词现在已用大写字母正确地拼写，而无需加注标点符号：RSVP，UK，CIM，RAM，ROM，USA，ASAP，TV。

现今的缩写词，尤其在科技表达中，其正确的文体是一个奇怪的混杂。单个缩写词的后面带有一个缩写点，如：Dr. Abdul，Prof. Leites，no.（number），fig.（figure）。然而，计量单位则没有大写字母且不以缩写点结束，例如：kg（kilogram），cm（centimeter），km（kilometer）。

有些计量单位是首字母缩写词，其中的大写字母和缩写点也已消失，例如：ppm（parts per million），rpm（revolutions per minute），kph（kilometers per hour），bps（bits per second）。有趣的是，缩写的人名通常仍保留大写字母：N（Newton），K（Kelvin），T（Torr，源自于 Torricelli）。

科技论著中可接受的各种术语缩写形式可参照 *Elsevier's Dictionary of Acronyms, Initialisms, Abbreviations, and Symbols*（2003 年版）。

意思符号（Emoticons）

最极端且最没有帮助的方法是使用"意思符号"简化英语交

流。意思符号是一个令人感兴趣的新生事物，并且是仍在演进的语言趋势，它们在我们所收到的email中出现，常常使人感到兴奋、恼怒或困惑。

也许可以见到表示情绪的图像作为符号在2000年以后出版的词典中出现。“Emoticon”是由“emotion”和“icon”混合的单词，是一个具键盘特点的组合词，被认为是传递情绪的符号图像的旁门左道。例如：表示高兴、悲伤、吃惊、厌烦、惊恐的“脸部表情”。意思符号不常用并且不属于当前的专业交流。

这种奇怪的现象愈演愈烈，出现了包括大量短语的首字母缩写：“CUS”代表“see you soon”或“IMHO”代表“in my humble opinion”。这类符号的价值更低并且比意思符号更难让人理解，在由朋友组成的小圈子以外的人看来，这种符号既不有趣而且让人费解。请不要在国际交流中使用它们。

要对自己所接受的网络交流中出现的变化保持敏感，判断作者是谁，并慎重选择自己所遵从的模板。有些文体在目前过于随意，应不要急于模仿。然而，应保持警觉，因为可接受的意思符号一直随时间在改变。

疑问句

避免在论文中向读者提问。这种技巧已经过时并且很少见。取而代之的应该是表述传递给读者信息的观点。向本不该回答问题的人设问，会让人觉得有点独断和专制。

核查一下模板和复印的范文。也许能发现某篇文章中有向读者设问之处。然而，这种情况很少见，在国际性期刊中即使出现这种情况，多数时候也是一篇文章中仅出现一次。因此，应控制自己只限于陈述观点，把问题留给能够回答你的提问的现场听众吧。

神秘的单词“The”

也许国际英语的变化将终结只有英语母语者才能体会正确使用单词“the”的现象。然而，目前英语母语作者对“the”的使用更加不一致，其玄机已超出大多数非英语母语者的忍耐。相对神秘的、听起来更高贵的“the”而言，冠词“a”和“an”的正确使用更容易些。

在理解“the”的用法方面，一个令人沮丧的现象是英语国家的儿童直到上学前使用该单词都没有困难。实际上，没有给他们用法指南，在语法书上也没有足够的相关信息。因此，我们在离开学校时都相信，小说、报纸和诗歌中常见的、使用优美的“the”就是这个单词的用法。有些人后来成为科学家并试图在科技期刊中使用该文体。

科技期刊的文体，尤其是研究报告，比其他类型的作品更少地使用“the”。英语中有许多“the”是可用可不用的，幸运的是在科技写作中可尽可能地省略可以不用的“the”。在现今的科技写作中，这一点对非英语母语作者和英语母语作者在某种程度上都是一个问题，但是英语母语作者对省略抑或保留“the”有一种“感觉”。这种“感觉”也许需要时间的培养。“存在怀疑的时候就省略它”，这个建议不见得总是对的。最有帮助的素材是参照由近期出版的期刊论文所构成的模板。

使用2000年以后出版的数据库

你可以利用近期出版的词典来跟踪语言的变化，这也是紧跟语言变化的最后步骤。本世纪初期英语中新增词汇和已有词汇的词义改变的速度是前所未有的。此外，语言学家预测这种改变将会随着英语逐渐成为全球化语言而加快。

科技论著的作者应该核查自己语言数据库是否过时，无论该数据库是记录于书籍还是存储于电脑中。目前的许多拼写检查软件不能识别已存在多年的语言所发生的变化。CD-ROM 或我们书桌上的词典如果是数年前出版的，则会给我们造成误导。那些出版于 2000 年以前的词典当然不能再给我们提供足够的帮助。

无论是选择英国英语还是美国英语的数据库，都应该了解每一种数据库都有其特定的编纂方法和优先性。例如，在许多版本的美语词典中，*Random House Webster's College Dictionary* 及其他由 Random 出版社出版的词典，是为数不多的在每次增补版中都增加新词、并尽量先列举单词最常见意思的词典。这与那些优先列举不常用词义（诸如以语言的历史演革为线）的词典形成对比。Random 出版社也按年份列举新旧习语，并且一直关注来源于因特网和计算机的新增词汇。

Microsoft Encarta College Dictionary：*The First Dictionary for the Internet Age*（2001）是一本相对较新的词典，这本词典在当代政治学和科技语言方面均很实用且没有倾向性。然而，其代价是删除了其他词典中记载的一些历史和词源学方面的信息。该词典的非删节版于 2005 年出版。

判定词典或数据库中哪些内容对自己是最重要的并选择适合自己的词典或数据库。了解自己的语言数据库的针对性和实用性是绝对必要的。使用陈旧词典不是一个明智的选择。

语言变化的近期实例

“email” 这个单词的演变为正在进行的语言变化提供了一个有趣的例证。这个单词形式的定期改变贯穿于语言改变之中，当代趋势依次是：

- 采用缩写；
- 取消大写字母；

- 省略连字符；
- 用名词代替动词。

尽管 electronic mail 作为术语出现于 1975～1980 年，Random 出版社 1984 年版的词典中也仅仅列举了“electronic data processing”和“electronic music”，并没有词条“electronic mail”。其后，随着通过电脑传送邮件的日益普遍，增加了一个大写字母创建的“Electronic mail”词条，似乎承认了其重要性。

后来，随着英语中放弃大写字母和接受缩写的后现代趋势，1992 年版 Random 出版社的词典放弃大写的“E”并将词条列为“electronic mail”，并包括一个单列的词条“E-mail”，有趣的是缩写的字母“E”大写。然而，该词典的 1997 年版放弃了“E”并且词条变化为“e-mail”。最后，随着当前省略连字符构成一个单词的趋势，2001 年甚至保守的牛津大学出版社的 *Oxford Dictionary of Current English* 也将“email”列为正确的拼写形式。现在的词典将该单词既列为动词也列为名词。这大概是术语 electronic mail 的完整的演变，给我们提供了一个较好的英语语言变化如此快速的实例。

与变革共舞艺术的将来

英语通过互联网正在向世界上越来越多的角落扩散，其自身也正在通过其他语言而得到扩充和改变，并且正在积聚新的财富。尽管英语看起来好似当今赛马比赛中最强壮的马跨越了全球，但所有的骑手都应该牢牢坐稳并且要密切关注地平线。最近一个德国教授说他在科研中更习惯于用英语而不是德语思考。如果这种情况在世界上其他地方也成为现实，所有人都得考虑科学会因此失去些什么。应该说科学需要来自其他多种语言思考方式的灵感，因为这些可能是改变和丰富科学本质的灵感。

5 撰写摘要、建议书和信函的艺术

要想论文被国际性期刊接收发表、在国际会议上做学术报告、或者撰写成功的基金申请书，一个重要的方面是要能写出一份好的摘要、清楚明白的建议书和恰当的信件。写好这些东西都不难，但需要专门的技巧。

摘　　要

每一份期刊或每一个会议都期望投稿的研究论文或报告附有摘要。摘要会被首先阅读，并且其快捷地表达在很大程度上影响到作者的工作能否被进一步考虑发表或展示。摘要旨在用易于理解并能快速传递给他人的方式，来讲述一个科学故事。

摘要包含你研究工作的精髓。摘要不是总结；摘要比总结更为简洁和清楚。总结通常是按时间顺序来组织，摘要则不是。摘要按重要性来构建，它阐述发现了什么，如何发现的，与其他研究相符合的情况，并对下一步工作提出建议。摘要是一个有关精准语言的操练。

摘要撰写的困难在于其必须简短——十分简短。大多数期刊的投稿指南要求摘要的字数应少于 100 个单词或更少。会议摘要有时要求少于 50 个单词。撰写一份好的摘要需要有非常多的训练，甚至对那些具有极高英语写作能力的作者也不例外。

摘要写作需要不同寻常的感知和语言训练。多余的单词应该仔细删去，直到剩余的单词能真正传达到同行的大脑和英语母语

者的耳朵中。单词的清楚性将决定：首先，其他人是否会阅读你的作品；其次，并且可能更重要的是，读者能否将这个信息准确地转告他人。

Wisconsin 大学一位具有丰富的论文发表经验的化学家自豪地声称，他能够撰写出比其他任何人都短的摘要。如果是这样，他会被所有期刊的编辑、读者和会议的组织者欣赏。摘要撰写的五条格言为：

- 不超过所要求的单词数；
- 认真编辑；
- 请一位十分了解自己工作的同事做编辑工作；
- 重新编辑；
- 参照拟投稿期刊最近发表的摘要或拟申请参加会议的前几届的会议文集，核查自己对单词和句式的选择。

阅读摘要的人远比阅读论文的人多。因此，要花时间和精力使摘要简明扼要，如同打磨一块小巧而精美的璀璨宝石。

建议书（Proposals）

用于出席会议的会议摘要相对容易撰写。而基金申请书的撰写相当困难。这两种建议书都是以电子版形式递交。

会议摘要（Proposals to Conferences）

会议摘要的撰写与论文摘要的撰写相似。简洁十分重要，但会议很少要求其摘要与期刊的论文摘要一样简短。每个会议都会在其网站上公告摘要的要求和投寄截止日期。这些需要严格遵循。会议通常倾向于一页的摘要以便刊登在会议日程上。如果会议摘要被接收，组织者会通知作者递交详细论文以便出版会议论文集。寄交论文供会议出版文集是自愿的。会议文集通常公开出

版。然而，作者在自己的论文以会议文集形式公开出版以前应慎重考虑，因为科技期刊不会考虑已经以其他形式发表过的稿件。

基金申请书 (Proposals for Grants)

基金申请书的撰写与会议摘要的撰写大不相同。基金申请书篇幅更长，需要提供有关的研究信息、研究背景、研究目的，及其对基金资助机构的价值。各机构、组织及各联邦政府对基金申请书的要求各不相同。

大多数大学和工业研究实验室都有基金申请书写作高手，他们能够给你提供帮助。此外，提供资金资助的部门会提供详细的申请指南。不同基金的申请指南相差很大。许多基金资助机构愿意提供早期的成功申请书的复印件。

第一次申请基金通常不会成功，但不必气馁。如果基金申请被拒绝，被拒绝的理由会随着拒绝通知一起反馈回来。下一步就应该认真针对被拒绝的原因重新撰写申请书，并重新递交。获得多项基金资助的成功的科学家告诉我们，对于同一份申请书，他们通常需要重写并递交三次才能获得通过。除了一次次地提高申请书的质量以外，他们还通过可能是最好的方式——经验，了解了更多有关撰写成功申请书的知识。

信　件

投稿信

现今给期刊投稿是通过电子形式完成的，并且最好附上一份简短的电子投稿信。这类信件比较容易写，并且不要求原创性和生动性（图 5.1 是一份投稿信实例，表 5.1 为结尾词的建议）。

一般来说，投稿信就是简单地告诉编辑已附寄了一篇文章供

他们考虑能否发表，也可以包含一份简短的本领域的专家名单，推荐作者自己认为合适的 3～4 位审稿人。这样做是为了向编辑提供一些熟悉稿件论题的专家的信息。编辑也许采用、也许不采用，但给编辑的这种帮助可以防止编辑把稿件送交给不合适的审稿人。正常情况下不应建议与作者同一单位的同行作为审稿人。

图 5.1　给一份科技期刊的电子投稿的投稿信

Editors

Journal of Important Science

1000 Hope Street

New York，NY，USA

February 20，2006

Dear Editors，

Please consider the attached manuscript for publication in *The Journal of Important Science*.

Suitable reviewers for this manuscript，who are acquainted with this field of science，include：

- Prof. J. C. Maxwell，Chem. Dept.，Institution，City，USA，email：mx@yahoo.edu.
- Prof. M. Genji，Materials Sci. Dept，Institution，City，Japan，email：gnj @matsci.jp.
- Dr. J. S. Bach，Research Dept.，Company，City，Germany，email：js-bach @matris.de.

Sincerely，

-*Hong Mee* (*Type your signature in italics，without a title*)

Dr. H. Mee，Associate Professor (*Type your name，title，address，tele-*

phone, and email)
University
City
Country
tel: 609-731-4855, ext. 3
email: nmee@university.edu

表 5.1　用于专业信件的结尾词的建议

专业信件	个人信件	有点过时的	完全过时的
• Sincerely, • Sincerely yours, • Yours, • Yours sincerely,	• Warm regards, • All the best, • Best wishes, • Cheers, • Best regards,	• Yours truly, • Respectfully yours,	• Your humble servant, • With deep respect, • Humbly yours,

介绍信和申请信

Thabo Mbeki 在南非的一次演讲中称因特网在社交方面的创新更甚于技术发明（Crystal，2001)。现今世界各地的大多数信件是通过因特网收发，不管是发给熟人还是初次结交的人。通过因特网的交流已经极大地改变了正常的 email 通信的体例。有些人可能会说我们中的许多人在给他人写信时已经变得令人吃惊的随意。对于我们中的许多人来说，这种方式颠覆了我们所学到的大量的有关信件写作的惯例。

在发送 email 时使用何种体例是作者的选择。然而，要仔细选择模板并考虑自己希望传送何种类型的个性。有些种类的语言也许倾向于友好，但实际上可能由于不正式而显得不礼貌。例如，将以“Hi,”或“Hi Petey,”或“Hi Dr. Young”开头的 email 信息发送给作者从没有见过或从未通过信的人，可能会使收信人吃惊。

另外，有些称呼显得过于正式，如：“My Very Dear Dr.

Young”或“Honored Professor”。这些称呼本身没有任何错误，但它们显得过时了。另一个极端是我们偶尔收到只有姓名和主题而没有称呼语的 email，这种形式的 email 如果不是发送给老朋友或是那些一直通过 email 联络的人，似乎显得很鲁莽。因特网使我们的通信更为快捷和有效，这在邮政通信时代是做梦都想不到的；现今在多大程度上采用那些传统上的通信礼节完全取决于作者本人。

对于任何一封 email 都应确保结束时附上类似于“Sincerely”的单词或短语，并在其后署上作者姓名，不要加任何头衔。在每一份信件结束后，email 可能会自动加上带职衔的作者全名、作者所在的机构、电话和 email 地址。如果作者的 email 没有设置上述功能，就在作者署名后空一至二行，左顶格加注上述信息（表 5.1）。

最有效的介绍信或申请书在于其简单和直接。它们重点突出、简洁，只陈述实在的相关信息。随信可附带自己的简历和一份相关的简短文本，如一份论文摘要。推荐信可稍后由推荐人发送。因为介绍信和申请书非常简短，因此其中的英语表达绝对不要出现错误，即使很轻微的错误也不可以。在发送信件之前要编辑信件，并且至少请一位他人帮助编辑（图 5.2 为一份介绍信和申请书的实例）。

保留发出和收到的信件。这些素材有助于将来撰写恰当的信件。Email 通信的危险在于作者写得很快以至于英语表达不能达到作者所期望的那样完美。最好的建议是使用文字处理软件写信，在确认表达很完美之后再将信件拷贝到 email 中。这种方式给作者带来的成功会使作者的额外付出更加值得。

图 5.2 通过 Email 发送的介绍信举例

Date：Tue，23 Feb 2006
From：K. J. Ping <kjing@hspt. ac. jo>
Subject：Application for a Postdoctoral Position
To：west@ch em. wisc. edu

Dear Professor West，

I am a graduate student at Advanced Technical University in Berlin，Germany. I received my Ph. D. ，in October，2005 and expect to complete studies for my Ph. D. degree by April or May 2007. My research has involved the study of the synthesis of optically active SiO-containing polymers and siloxane gels.

I am highly interested in the research in polymer being done in your laboratory，and would like to work in your group，if such a position is open. I would appreciate it very much if you would let me know about any such possibility.

I have attached a copy of my personal resume. My supervisor，Professor Dubono，will be happy to write a letter of recommendation for me，and other references are listed in my resume.

Yours sincerely，
-K. J. Ping

K. J. Ping
Department of Chemistry
Advanced Technical University
Berlin，Germany
kjing@hspt. ac. jo

第二部分
参加国际会议

在国际会议上展示自己的优秀研究成果是每个人的愿望，同时也令许多人恐惧。然而，那些对于会议报告感觉不自在的人用不着再如此了，因为做好会议报告的艺术是可以学习的。科学界需要了解你所做的激动人心且有趣的工作。告诉他人自己的研究成果是给其他科学家的礼物，很快你就会与国际上许多人共享自己的研究成果。如果你这么做了，科学就会因此变得更加友好和包容。

你已经撰写出一份成功的会议摘要（参见第 5 章有关摘要的撰写），并被接受作为会议报告人。恭喜。在会议上大家期望你演讲（而不是阅读）你的论文，讲述（而不是阅读）你的幻灯片。

成为一个成功的报告人意味着充分地准备。只要准备充分，就不必花费大量的时间用于焦虑。有些人在焦虑方面花费了大量的宝贵时间。焦虑没有任何帮助。准备是有帮助的。作为一位明智的、成功的科学家，就应该进行充分准备以成为一位成功的报告人。

因为本书的第一部分针对写作而第二部分针对演讲，所以读者将会发现明显不同的建议。例如，在写作方面要学习的有：通过编辑删除所有不必要的单词；只有需要时才使用转接词；应慎重使用委婉但意思不明确的动词，如 could，would；并且要避免

使用提问的形式。现在读者会发现在会议报告中可能会故意使用一些无关的单词以表示客气，并且使用一些语言的缓冲剂以便自然地转换幻灯片。读者也许发现在报告中通过语言或幻灯形式提问有时会成为有效的技巧。

幸运的是，成功的学术报告的艺术要远比论著写作的艺术更容易掌握。这两项艺术在通往成功的科学交流的道路上相伴而行、互有帮助。

- 第 6 章帮助读者了解幻灯片的作用；
- 第 7 章阐述使用声音的技巧；
- 第 8 章论及肢体语言和练习；
- 第 9 章包含在会议上打盹的不得已的建议。

6 准备幻灯片的艺术

一旦知道将要做会议报告，就开始准备幻灯片。选择题目、关键词、图件、引文，并思考颜色和设计。只要幻灯片准备好，一切都变得更容易了。不知不觉地，在准备幻灯片的全部时间中，自己强大的潜意识思维正在思考讲解幻灯片的单词。在你制作幻灯片的时候，你就像一位在花园里播种的农场主。

现今大多数科学家都使用软件程序设计和准备幻灯片，如微软的 PPT（Microsoft PowerPoint），可以准备成一套各自独立的幻灯片，报告时人工依次放到幻灯机上；或一套存储于 CD 或存储棒（flash stick）中的幻灯片，报告时通过电脑投放。选择何种方式来展示并不重要，重要的是选择自己感觉最轻松自在的方式，因为每种方式都有其优点，都很好。不过，明智的报告人会携带另一套独立的幻灯片，以预防电力故障或意想不到的电脑不兼容等问题。

做一个艺术家

电脑使得我们能够制作精美的幻灯片：可以使用颜色、插入图像，甚至增加动画。但是，请善待听众。诸如颜色、图像或动画的增加只有在有助于幻灯片达到下列要求时才适合使用：

- 清楚；
- 易读；
- 容易理解。

遗憾的是，使用软件制作幻灯片并不能如我们所期望的那样解决差幻灯片的问题。然而，这类软件已使得制作精美且令人难忘的幻灯片更为容易。

作为一个科学家，当制作有关自己研究成果的幻灯片的时候，同时也就成了一位艺术家。目标是制作增加信息而不是分散信息的幻灯片。为了制作艺术性的幻灯片，不仅要考虑文字大小和空间位置的安排，还需要注意字体和颜色的选取。最终是期望幻灯片能显示出报告人在制作时充分考虑了自己的研究工作，所制作出来的幻灯片清楚而悦目，而不是像色彩亮丽的商业广告。听众欣赏一组好的幻灯片，但他们主要是对报告人的研究成果感兴趣，而不是关注报告人如何能使用奇异古怪的颜色或图像以旋转或弹射方式进出屏幕。要尝试制作引人入胜且具科学风格的幻灯片。

颜色的使用

关于颜色的使用，国际会议上有好的也有不好的例子。下次参加会议时注意一下最易理解的幻灯片是如何使用颜色的。设想一下自己的下一套幻灯片如何制作，尤其是如何使幻灯片看起来完整统一而非随机排列。

每个电脑软件都有供幻灯片使用的背景颜色。浅色背景，如淡黄色，比素白色荧屏更吸引人，但是，应选择不影响幻灯片内容清楚表达的背景色。注意亮色背景使幻灯片上的信息阅读起来比较困难。背景来源的形式有：(1) 可用于全部或部分幻灯片的模板；(2) 通过“填充”颜色的方式变换背景或将文字背景保留为白色。此外，任何颜色均可以通过调节变亮或变暗。

许多专业性的软件，如 ChemDraw，只具备有限且刺眼的颜色供选择，但主程序可提供广泛而丰富的颜色。因此，当需要专业性特殊符号而使用某个软件的时候，可返回主程序选用悦目且

不至于冲突的颜色。使用诸如鲜红或深蓝的基色色调来表示亮点单词，则不如使用伴有一些橙色或粉红色的红色单词或伴有一些绿色或红色的蓝色单词更令人悦目。调色板中可供使用的颜色十分丰富，花些时间寻找好颜色吧。

一张幻灯片中颜色太多，如 5 种或以上，通常不仅不能令人悦目，而且效果也比 2～4 种颜色更差。然而，在最近的一个国际会议上，一张极其有效的幻灯片选择了 9～10 种颜色用于填充和文字。因此，可以采用自己的方式，但要善待观众的眼睛。例如，紫色和红色出现在同一张幻灯片中通常令人不舒服，尤其是使用红色背景反衬橙色。

当幻灯片中需要列举多条项目时，背景充填色能够有助于明晰信息。当大量信息必须列举于同一张幻灯片并且总共只有两种背景衬色时，可以将项目中浅色条带背景的信息与屏幕颜色条带的信息间或排列，这种方式很有效。

选择字体和字号

字体

在幻灯片中，较简单的字体，如“Arial”，比更为传统的带衬线的字体，如“Times New Roman”，在屏幕上更容易阅读。通常全部采用黑体字是最容易阅读的，尤其是具有大屏幕和拥有大量听众的时候。无论如何要避免在同一张幻灯片中使用多种带衬线和不带衬线的字体，以免分散听众的视线，妨碍听众对幻灯片的阅读和理解。小写字母比所有大写字母都容易阅读。

字号

尽可能使单词和数字的字号足够大。在大多数软件中小于 18

号的字是不能为所有听众所阅读的。这也许意味着需要制作更多张的幻灯片并且减少每张幻灯片中的信息。要让会场后排的听众能够阅读所有的信息，包括引文。要做到这点，就应该：(1) 限制每张幻灯片中单词的数量；(2) 训练自己在每张幻灯片中尽可能地少放信息，在讲演中用声音来补充省略的信息。

当幻灯片中充满太多信息以至于听众跟不上报告人的思维逻辑的时候，会场中的某些听众会对报告人感到恼火。不幸的是，如果听众同时也听不懂报告人的英语，那么这种情况更可能成为现实。

增加强调

增加幻灯片中的强调可通过颜色的使用，也可以通过字号的选择，比如最重要的信息用大号字、次重要的信息用稍小的字号。注意：即使是最小号的字也要能为听众所阅读，需要时使用缩写。此外，在整套幻灯片中要使自己的选择具有一致性。

使用斜体字有时可以有效地增加强调。但是，使用下划线效果不好。使用感叹号很少被认为是一种好的强调形式。一整套幻灯片中总共只有一个感叹号不会使报告显得不专业。

如果避免使用完整句子或长的短语，并仅仅使用关键词或简洁短语来代替，就会降低强调的需要。有效强调的途径包括选择单词、声调、停顿以及重读。有效的强调会使听众欣赏报告人的风格并能更好地理解幻灯片。

用数字标列条目

应谨慎采用数字在幻灯片中标注本不需要数字标列的条目。如果仅仅列举一些观点或详细信息就避免使用数字标列序号：1，2，3...；I，II，III...；i，ii，iii...，或具有数字意思的 a，b，c... 使用

数字标列条目仅限于需要强调时间顺序或优先性。否则，没有任何意义，应该用箭头、破折号或其他合适的符号替代。

决定幻灯片的数量

以下为决定需要多少张幻灯片的步骤：

- 首先，汇集所有的幻灯片；
- 其次，对幻灯片进行排序；
- 第三，尝试解释这些幻灯片；
- 第四，估算讲述每张幻灯片的时间：理想情况下每张幻灯片的完整解释时间约为 1 分钟（或更短时间）；
- 第五，增加、删减或合并幻灯片，目的是使每张幻灯片的解释时间限于 1 分钟或更短，并且总体时间不超过会议所规定的时间。

选择题目和单词

题目是重要的。题目应尽可能简单且简洁地指出幻灯片的主题。题目首先应该在形式上看起来像个题目，或者将其圈在带颜色的方框中，用更大的字号或全部大写。无论如何，题目应该通过适当的方式清楚地表示出来，因为它们是题目，所包含的信息对于听众理解幻灯片是至关重要的。题目如果以主题而不是完整句子的形式表达，会更为清楚和有力。

在幻灯中任何地方使用完整的句子都极少能做出好的幻灯片，甚至在结论中也是这样。幻灯片中完整的句子使演讲人处在一个尴尬的位置，因为演讲人被迫向听众大声地阅读。给有文化的听众阅读句子是对他们的冒犯。有文化的人在演讲人阅读完毕之前就已经看到并读完这些单词。因此演讲人的声音听起来重复和无趣，听众的注意力也会在报告人最需要他们集中的时候走

神。如何解决？解决的方案就是在幻灯片中使用关键词和短语，然后让声音来补充完整的信息，增加趣味和细节。否则的话，尤其是在结论中，报告就会以稍嫌枯燥的评注形式结束。没有人愿意以枯燥的评注形式结束会议报告。

完善一套幻灯片

表示致谢的幻灯片

这是一张重要的幻灯片，报告人在其中给予同事或资助部门以感谢。如果有时间，就大声阅读这些名字以示敬意。通常幻灯片中只包含被感谢对象的姓名，然后通过声音增加其职衔或其他信息，如所在的机构和国家。这张幻灯片通常在最后，但也可以是第一张。放在什么位置不重要，重要的是有了这张幻灯片，他人能够得到适当的感谢。

最后的结果

报告人尽其所能制作幻灯片，并使其完整统一。中间也许采用了几张过去曾经使用过的幻灯片。没有关系，但要重新加工它们，使它们与本次展示的其他幻灯片相匹配。

所幸的是通过浏览素材和电脑软件的帮助可以很容易地重新制作老幻灯片，并使它们成为新的整体的一部分。因此，花些时间使幻灯片具有一些有助于看起来像一个整体的共同特征。理想的情况是在整套幻灯片的每一张中都使用同一类字体、同一种风格的色调，以及同样的强调手法。也许你已选择自始至终都使用同样的浅色背景，或发明了某些其他独特风格的背景，使自己的幻灯片清楚地显示为一个整体。

最好的结果是制作完成的一套幻灯片能以 kaiseki 的形式提供

信息。“Kaiseki”是日本的高级宴会中一种非常令人难忘的上菜形式。许多种诱人的、精心准备的小盘食品依次优雅地呈出。设想自己的报告展示是一个宴会，而幻灯片是菜肴。然后每张幻灯片以小盘、美味的形式呈送信息。理想的情况是报告人有多张幻灯片，每张幻灯片需要不超过 1 分钟的解说时间。这样就可以清楚地展示幻灯片中的信息，听众也能愉快地享受这些精心准备的信息。

现在你已拥有一套完整且品味高雅的幻灯片，接下来要做的一切就是成为自己幻灯片的主人。要通过声音和肢体语言的运用向听众显示自己是幻灯片的主人，而不是幻灯片的受害者。

7 使用声音表达的艺术

英语的语调也许与你通常所使用语言的语调有所不同。如果是这样，你就需要学习吟唱一种新的曲调——一种重音极其重要的曲调。英语是一种重音调节语速更甚于音节调节语速的语言。因此，尽管发音很重要，但它对你的英语能否被他人理解的影响程度不如使用正确的重音。

重音与口音

无论是在标准的英国英语还是标准的美国英语中，语言学家和字典在精确的发音方面尚未达成一致，但是在重音的位置方面通常一致。因此，使自己的重音使用与某些英语母语者相符合，忧虑就会相对少些。如果重音正确，你就不必为担心自己是否有某些口音而浪费时间。每个人都有口音，甚至出生并成长于英语母语国家的人也有某种地方性口音。

也许随着英语的简单化和更为国际化，一套广为接受的发音体系将会产生，但这毕竟还没有出现，因此不必屏息而待。

音　　调

无论你的英语口音如何，都应该像对待宝贵的乐器一样爱惜自己的声音。首先，学习定调你的声音以便当面对听众讲演时不至于损伤自己。通过发射声音来控制音调，不是通过咽喉的上部

或鼻道来发声，而是通过咽喉的下部或胸前部发声。这种深部的发声会使自己的声音听起来更为悦耳，也会使你的声音保持“圆润”和热情。相反，如果你的声音定调较高，就会损伤自己的声带：咽喉容易疲劳，并且声音听起来“尖细”。

音　量

我们与朋友和家人说话时所需要的音量比面向听众时要小。成功的演讲者应该增大音量和日常发声的深度。实际上甚至在使用电子扩音器时也需要增大音量和发声深度，否则你的声音听起来就不够饱满和热情。

性别差异

导致男性与女性声音差异的社会根由如同生理因素一样。当然，男性与女性的声带有所差别。然而，如果我们不是因为文化因素而刻意使女性音调高、男性音调低的话，男女间的声音差异就不会如此之大。

通过咽喉而不是更深入的胸部发高频声音的女性听起来有点像儿童。也许这是国际性的，也许不是。然而，孩子气的重音腔调和音调也许会招致听众猜度演讲人并非如其所是地那么专业。我们所有人，男性或女性，都能够训练自己使用更为深度和饱满的声调演讲。

有些时候男性和女性的声音都会轻柔且难以让人听到。与朋友或小群体在一起时，轻柔的声音也许被认为是一种礼貌。然而，在大群体中，轻柔、小声的讲演则标志着演讲人不够确定，并且听众有可能怀疑演讲人所说内容的真实性。我们所有人都能够训练提高我们声音的音量。

语　　速

一旦练习了提高声音的音量，你就需要专注于比平常更为慢速和更充满生机的讲演。寻求某个人，最好是英语说的很好的人，来帮助你选择用于强调的单词或短语，目的是准备一个令人感兴趣的英语声音旋律。

数学家和语言学家的研究告诉我们世界各地的人说话的语速都是相同的。在每种语言内部，不同说话者个体的语速变化较大，并且所有语言中这种变化的幅度是相同的。然而，大多数人都认为其他语言的语速比自己的母语快。导致这种结果的原因在于当你说某种语言（诸如英语）的时候，你会感觉不如说自己的母语舒服，因而可能加快语速。也许正是这种对于英语语速的错觉导致你提高了自己的语速。

成功的会议演说需要比正常对话更慢的语速和更清楚的表达。然而，紧张可能导致演讲人说得过快。如果是这样的话，你也许会在追求大声而慢速的讲演中遇到双重困难，但是你可以通过练习和周密的时间控制达到目的（参见第 7 章有关练习和时间控制的建议）。

面对听众阅读

要记住最重要的事是听众和讲演人共同组成了一个演讲。避免给听众阅读幻灯片上的句子。听众是高级知识分子并且毫无疑问他们的阅读速度比他们的所听要快。因此，尽量不要阅读为他们准备的所有可见到的内容而冒犯他们。当然，解决的方案是在幻灯片中使用关键词或短语，而不是句子。这种方法能够使你在解释幻灯片的时候稍做浏览就能把关键词组合成完整的句子，给听众所阅读到的材料增加信息量。这会使听众感觉受到尊重，也

会使你避免因为说听众能够清楚阅读到的内容而尴尬。

不要朗读你的论文

关于对听众大声阅读论文的惟一建议是“不要”。这种方式乏味且无效。也许在你的职业生涯中有时必须要为某个听众阅读论文，因为此人缺席了本该出席的会议。然而，当你有时间准备时，永远也不要让这种情况出现。如果你实在没办法而必须要阅读一篇论文时，解决的方案是，充分熟悉材料，以保证演讲时能够经常目视听众，充满热情地发出声音，只需偶尔浏览一下文字。

非常遗憾的是有些人尽管很熟悉自己的材料，演讲时仍然阅读而不是讲述他们的论文。也许这些人认为他们的英文在阅读时听起来更好，但这永远不是事实。对于听众来说，听一个人读论文总是困难的。当某人朗读一篇科学论文时，他的声音会显得低沉而单调，然而，当听众能够看见演讲人的讲话、表情、微笑和手势时，信息就会变得生动和有趣。因此，要尽自己所能将你的信息变得新颖和激动人心。要使自己与听众进行超越语言的交流。

当演讲人朗读论文时他们的成功会受到影响，因为他们要被迫低头看稿件。这不仅有碍听众看见演讲人的表情，并且也使演讲人的咽喉受到影响从而所发出的声音难以被他人听清楚。最后的不幸之处是当演讲人阅读时，他们通常是隐藏在讲台或讲桌的后面。站在讲台或讲桌的后面总是不利的，因为这表示演讲人想与听众保持距离。

然而，如果因为这种或那种原因而不可避免地需要朗读论文时，你可以通过以下动作在某种程度上弥补由此带来的缺陷：尽可能多地抬眼目视听众，并且至少腾出一只手来进行非语言性的交流（见第 8 章）。准备论文时可以考虑以下几个方面：

- 在要强调的音节处标注重读符号；
- 标注需要声音停顿的地方；
- 划出需要加强语气的短语；
- 此外，首要的是，要大声地练习（见第 8 章）。

过渡性词汇

幻灯片准备好了。声音准备好了。现在你要选择什么词汇呢？你的幻灯片和你所复印的论文会提供好的供选择的动词、形容词和短语，但是它们不能提供使听众在不同幻灯片之间平稳过渡的单词。这些词不会在你所复印的论文中出现，因为它们是用于口语的词汇。在已经发表论文的最后一稿中，这些词都被作为多余的语言而编辑掉了。

但是现在你需要这些词汇。你需要这些在写作时恰好被编辑掉的单词和短语。在话语中而不是幻灯片中需要它们。在引导听众由一张幻灯片进入到下一张时需要一些简单的单词充当“柔软语”/“润滑语”。在会议上听英语母语者讲演时注意发现这些单词。图 7.1 列举了一些最近在一个国际会议上听到的这类单词。

图 7.1 用于柔软语的转接词

... as you see...
... having said this...
... once again we...
... and, yes, the...
... well...
... for example...
... now to our surprise...
... actually...
... anyhow...
... all right, so...

在会议上听英语母语者的报告时注意聆听柔软语的转接词。选择你所喜欢的那些词并将其加入到自己的模板中。

你也许也考虑采用源于你的母语或其他语种的转接词。这些词都优于“um uh...”，“er ah...”，“ummm...”。例如，你也许选择某些与下列英语单词意思相近的非英语词汇：“OK...”，“and...”，“so...”，“yes...”，“furthermore...”或“next...”。你的母语中诸如此类的词汇能够在不影响听众理解的情况下增加报告的民族特色，这种特色可能为听众所喜欢并增加他们聆听报告的兴趣。

8 身体语言和自如演讲的艺术

对我们任何一个人来说，即使是站在一位观众面前演讲也需要非常大的勇气。每位演讲者，无论他多么著名，都需要有勇气给一位观众演讲。你的勇气在日益增加，因为你能用两种语言交流：演讲语言和身体语言。

你走动的方式、你的面部表情和手势，你的姿态都将告诉观众你是谁。Arnold 和 Roach（1989）曾经说过，非语言信息通常优先于语言信息，而且传达的内容更多。心理学家告诉我们，我们使用的语言最多只构成 30%的交流内容。

对我们中间那些英语不好、不喜欢说话以及有幻灯片的人士来说，这是一个好消息。现在，如何用你的身体语言向观众传达你希望表达的意思呢？

眼神的交流

无论勇敢与否，你必须做出勇敢的样子。表现勇敢的最容易的方法是直接注视听众，这是一位优秀演讲者给听众的神奇触动。这表明你对自己的材料是自信的。在个人的生活中，你在谈话时会注视对方。与听众成功接触的秘诀是表示出你正在与他们对话的样子。

注视听众。从左到右，从前到后。专心地注视听众显示你多么希望他们能理解你。当他们意识到你多么希望他们能理解时，听众会更加专心地聆听而且会更好地理解。

持之以恒地注视听众。目光从一个地方转向另一个地方，在每个地方停留5～10秒钟或更长一点。如果直接注视听众的面孔让你分心，那么盯着两张面孔间与面孔平行的水平线。在大量的听众中，没有人会告诉你不要直接看着某人的眼睛。（不要在聚会或咖啡休息时间这样做，否则，人们会认为你不可捉摸或极端的心不在焉。）在演讲时看天花板和地板要小心：听众知道既没有人躺在地板上，也没有人挂在天花板上，他们也很想知道你为什么总是盯着桌子或吊灯。

最重要的是，不要让自己被“计算机幻灯片（PPT）”或屏幕所控制。技术让你有能力制作漂亮的幻灯片，现在确保让它呆在你后面或旁边。短暂看一下屏幕，提醒自己听众正在看到的是什么，或偶尔用激光笔强调某个要点。大部分情况下，用眼睛注视着听众并赢得他们的尊重。

保持“身体的开放”

在听众面前保持身体的开放状况意味着：让你身体的前面部分尽可能全部地面向听众，而且尽可能多一些。专家会避免将自己的身体隐藏在讲台或桌子后面。走出来，走近听众，让他们成为你的朋友。

双臂交叉置于胸前表明你企图隐藏你的本质。尽量向听众张开手臂并运用手势。最重要的是，在讲话时不要将后背转向听众。英语中有一句成语：“将背转向某人或某件事（turning one's back on something）”，意思是拒绝。所以，让手臂尽可能靠近屏幕、让全部的手势出现在屏幕上，这样你就不会在胸前交叉手臂或背向听众。不要依赖屏幕，熟悉自己的幻灯片，将注意力集中到听众而不是屏幕。偶尔一瞥足以提示自己每张幻灯片的内容，你本身是一位专家，要做出专家的样子：在讲话时看着听众。

在演讲时走动走动也不错。比如，在讲话或做手势时走动一

下会让你看起来比较舒服。然而，你应该避免前后摇摆，这样会分散听众的注意力，特别要避免向后退。向后退动表明你没有自信；你不希望让听众认为你对自己演讲的内容没有信心吧。

一些演讲者担心如何摆放自己的双手。处理双手的最好方法是不要去想它们。只考虑科学。然后，用你的双手传达你的信息和热情。应该让听众看到你是如何享受自己的所作所为。

你应该训练你的另一只手，让它能做一些简单的开放手势，帮助你解释你的工作。当你和朋友或家人在友好交谈时，什么姿势让你的手最自然呢？从内心里观察自己，然后当你希望与一位听众交流时，再用这些手势来帮助你。手掌向上、手指分开，或者是大拇指与另一手指轻触，这些都是特别有效的手势。

听众欣赏这样的演讲者：演讲人通过用手、臂、幻灯片和声音来说话，从而敞开他的思想。演讲人显得学识渊博、自信和富有经验。

使用激光笔

你手里握着一支激光笔，但这支笔可能会让听众发疯，科学家也许会因此被禁止拥有这个可怕的工具。然而，激光笔有一个非常好的优点：它让你的一只手有事可做。如果你要用它，那么你必须正确地使用。

关闭按钮

激光笔最重要的部分是它的关闭按钮。然而，即便是一些世界著名的科学家也不知道如何使用这个关闭按钮。因此，他们的谈话伴随着一束舞动的、跳跃的光。这个光不停闪烁，上下左右，一会儿呈“之”字形、一会儿呈圆圈或漩涡形：听众几乎听不见或看不见作者的科学研究，因为他们的眼睛要努力追踪光点

在屏幕上不规则运行的轨道。演讲者知道什么光点是起强调的作用，但听众不知道。结果必然是，听众的理解力和注意力都消失了。作为一名演讲者，你需要学会正确使用激光笔，不要在整个演讲过程中使用它。

使用激光笔时，请用单个稳定的光点指示信息。让光点在你希望解释的地方准确地停留 2～3 秒钟。首先保持光点的稳定，并让自己沉默，然后再关闭激光开始讲话。一个不停移动的光线会让听众不知所措，你在讲话时闪烁激光笔，这个闪烁的光点会分散听众的注意力，而对你所讲的内容充耳不闻。下一次参加会议时你要仔细观察，看看在屏幕上飞舞的光点如何像一只神经质的蝴蝶，让观看图片变得极端困难。你的听众是一批希望研究和明白你的幻灯片的知识分子，满足他们的愿望吧。

一旦学会如何控制激光笔的关闭按钮，那么你就向观众显示：(1) 你是一位技巧娴熟的演讲者；(2) 你熟悉自己的幻灯片；(3) 你尊重自己的听众。

用哪只手握激光笔和如何站立

站在什么地方、用哪只手握着激光笔，这是你的身体语言的重要部分。当你站在屏幕左边时，用右手握着激光笔；当你站在屏幕右边时，用左手握着激光笔。如果你在讲话时走到屏幕的另一端，那么换一只手握着激光笔，以便你的双手不会交叉置于胸前或背向听众。勇敢一点，始终面向听众，始终不要让双臂阻挡你的身体。

最近在费城（Philadelphia）的一次国际会议上，一位演讲者展示了一种非凡而有效的技术。他将自己的一只手放在握激光笔的另一只手的手腕处，稳定握着激光笔的手。这样他能将激光笔的光点在一个地方稳定几秒钟。他既没有转过他的背也没有偶尔看看屏幕。他准备得非常好，他熟悉自己的幻灯片，他向听众表

明他很清楚，他是一位专家。你也能这样。

练　　习

一旦你对自己的幻灯片、自己的声音和自己的身体感到舒服，那么你就完成了基本工作。最重要的是，你必须安排好自己的演讲时间，不要让自己因超时而窘迫。

所有的演讲技术都必须练习，绝大多数科学家宁愿做科学而不愿练习演讲。然而，只有通过专门训练才能发展出适合个人特点的演讲风格，然后，它将永远属于你，你可以回过头来看看什么是重要的：在科学中发现新思想。因此，接受必需的自我训练，让自己拥有演讲才能，之后的一生中你将永远是一名成功的演讲人士。

准备

你的幻灯片已经准备好。你已选择好要讲什么。现在，你必须大声通读你的幻灯片，并为自己计时。你可能会发现由于时间的限制，你别无选择，只能删减部分重要材料，那就将这些幻灯片保存起来留作他用吧。大声诵读是你遵守既定时限的唯一方法。你绝不希望经历这样的事情：让自己的听众不安和厌烦，或迫使会议主席告诉你停止。

一旦你学习控制自己声音的音量和厚度，那么对你来说，在大量听众前演讲通常会比在8～15位听众前演讲更容易，因为大量听众的无个性化特征不会让你窘迫。

两个警告

现在，你开始准备练习你的整个会议角色。办法之一是想像

空房子中的三面墙代表你的听众，第四面墙是你背后的屏幕。想像三面墙是一排排兴趣盎然的科学家。通过解释你的幻灯片，你开始向他们讲述自己的故事。偶然轻轻一瞥背后屏幕上的幻灯片，让自己的身体尽量面向听众，在讲话、走动和做手势时，眼睛始终盯着想像中的听众。最后，记住检查自己的时间。现在你正在形成优秀演讲家的习惯，并将终身受益。

练习你的演讲，仿佛是在与一位朋友交谈。竭尽所能避免单调、重复和摇滚节奏。听众喜欢听到你热情的声音，这是你热爱科学的象征。听众希望你轻松自如；你希望听众享受你的演讲：这是成功所需要的完美吻合。你的秘密就是大声、清晰、热情，而且要慢、慢……慢，尽量仔细而热情地解释你的工作，就像其他科学家按你喜欢的方式向你解释他们的工作一样。

按时结束

Lewis Carroll (1866) 在《爱丽斯漫游镜中世界》(*Through the Looking Glass*) 中写道："……小心无意义文字游戏诗 (*Jabberwocky*) ……"演讲中缺乏良好的时间概念就是你的 *Jabberwocky*。小心!

会议给了你一定的演讲时间。典型的是 20 分钟，包括最初别人介绍你的时间和最后你回答问题的时间。即使所给的时间不够你详细解释自己的工作，你也要准备接受这样的时间安排。最重要的是你必须遵守时限，这至关重要。

没有什么事比演讲者超时更令听众和组织者生气。或是下一位演讲者的时间被减少，或是整个会议的时间被拖延，而这一切都是你这个 *Jabberwocky* 造成的。

有一个让你遵守时限的方法：首先，你必须以实事求是的态度让自己明白：在给定的时间里能详细地解释多少工作？也许你有一个颇有价值的长结论，需要解释过程、背景并展望未来的可

能性，这太糟了，太糟了，但这就是现实：你只有几分钟的时间。你无法讲清楚每件事情。因此你只能：第一，选择最重要的；第二，在清楚、整洁的幻灯片上展示；第三，用通俗易懂的英文慢而简单地解释。让听众忙于浏览眼花瞭乱的数据是一个演讲者所犯的最严重错误。

最后的言辞

演讲结束时简单地说一句“谢谢各位”。这是让听众知道你结束的最好、最亲切的方式。不要因提前一点结束而担心。没有人会为演讲者早一点结束而烦恼，只有那些讲得过长的人才容易让听众不安。如果你早一点结束，你不会陷入困境，你会有更多时间听到评论，下一位演讲者也会感谢你的礼貌。

巧妙回答问题

一般情况下，演讲结束后你会有一些时间听取来自听众的评论和问题。在这一阶段，理想的情况是，为了更清楚，主席会重复问题或评论，如果这样的情况没有发生，那么你可以要求提问者重复问题，让所有的听众都能听见，你也可以因此让自己有额外的时间来思考。这时要让自己的声音大一些，仔细听，走向提问者，而不是背离提问者。把握你的时间，你是演讲者，控制权在你而不是在提问者手中。

在提问时不要害怕，因为在演讲结束时，由于某种程度上的心理因素，听众在本能上已经倾向于你。他们已经认真地理解和同情你和你的科学，他们会站到你这一边保护你不受陌生人或困难问题的为难。所以依靠听众，并准备问：

- 听众中有人能帮助你回答这个问题吗?
- 请提问者改述自己的问题；

- 请提问者在会后来与你交谈；

或者准备说：

- “我不明白你的问题，请解释一下”；
- “这是一个好问题，我需要思考一下”；
- “我希望我能回答这个问题”。

请记住：问题和评价时段对你来说也许颇有价值。仔细倾听听众席上人们在说什么，你也许会从中得到关于未来研究的重要启示。

挺直站立、微笑、充满自信地注视，你已经将自己训练成一位优秀的演讲者。你还应告诫自己专心致志于自己所想：第一，讲述自己的故事；第二，交流想法；第三，让科学更大、更好一点。你已经学会忘记自己、专心与听众交流。你成为了一名擅长演讲的专业人士。

9 在会议中打盹的艺术

在会议和研讨班中如何打盹而又不影响作为一名严肃科学家的声誉，这是任何一位与会者都需要认真考虑的重要问题。第 9 章中只讨论如何处理时间为 30 秒至 3 分钟的打盹。超过这个时限、特别是进入沉睡状态的打盹不属于本章的讨论范围。

在会议尤其是国际会议期间，在单个分会议中，频频在警醒状态下打盹不仅是时常发生之事，而且值得鼓励，因为这是保护大脑的一种方式。

成功打盹的最安全环境是大型会议。在不足 10 个人的小组会上打盹，即使对一位打盹成瘾的人来说也是一个超级挑战。在你彻底研究完本章内容之前，应该避免在小组会上打盹。

首先，在讨论技术性问题前，先弄清楚打盹这个词的意思：打盹是当你在滑入睡眠又醒来以交替放松紧张的肌肉时，头部明显停停动动的运动。应该避免这种动作：这可能会导致颈部疼痛，而且最严重的是让所有的与会者都发现你确实在打盹。使用本章中所讲的一个或几个技巧，资深的与会者就能避免这种明显的打盹或头部来回摇动，即使在眼睛闭上时也能保持清醒和聆听的状态。

怎样选择一种恰当的打盹技术呢？这取决于你准备向谁隐藏你的活动：演讲者、坐在你旁边的人，或是坐在你后面的人。后者是最容易对付的，你只要用手支撑头部让它不要摇动就行了。如果与会人员呈圆形或马蹄铁形就座，这就需要打盹者发挥全部智慧。

在过去的岁月中已经发展出各种各样成功的打盹技术：

- **墨镜（Dark Glasses DG）** 这是历经岁月考验的老字号打盹技术。采纳这种技术时需要注意的是为参会选择一种最黑的镜片。此外，你在开会前就应该带上这付眼镜，避免其他参会者认为黑眼镜是你打盹的掩饰。（你或许能通过数听众中戴墨镜的人数来了解演讲者的声誉。）
- **眯眼睛（Slit Eyes SE）** 这是一项经过时间考验的成功技术，但使用时要谨慎，眼睛不能完全闭上，至少要保持一部分视力，这是成功的关键。必须小心控制眼皮的眨动，保持专心听讲的礼貌行为。可选择以用手支撑头部。
- **用手挡着眼睛（Hands Over Eyes）** 这种技术被广泛使用，但需要一点点实践。有几种挡眼技术可供选择：

  —**手放在前额（Hands On Forehead）** 这时眼睛被遮着，好像是在阅读。如果有可能，让手指分开，因为手指并拢虽有一些优势，但会显得比较显眼。如果你选择阅读的假象，那么小心放好阅读材料，不要让它们在你打盹时落到地板上，暴露你的真实行动。

  —**手插入头发中（Hands In Hair）** 这种技术让头可以深深弯曲，有效地让眼睛处于地平线水平而不易被他人发现，除非某人的头从膝盖下往上窥视你的脸。（注意：在会议进行一半后采取这种姿势是危险的，因为它可能让你完全入睡。）需要小心的是，不要让头从支撑它的手中滑落到桌面，否则大家都知道你在打盹。将会议日程表醒目地打开放在自己面前，许多人成功使用了这一技术。

  —**手指放在眼睛上（Fingers On Eyes）** 这种技术得以让眼睛在打盹过程中完全闭上一小会儿。如果你戴眼镜，这是一个方便的小花招，将手指放在眼镜下面，让眼睛闭上。实际上这也给头一个支撑。然而，必须极端小心

的是不要进入深睡状态，否则会把眼镜弄掉。

- **睁只眼闭只眼 (One & One)**　这是最近发明的一种技术，不幸的是掌握这种技术需要大量的实践。在可被旁人观察到的一只眼张开的同时让另一只眼闭上，可以最大限度地享受打盹的益处。因为使用时需要两只眼睛的良好配合，所以部分使用者反复讨论这种技术的困难之处。

  最近一份现场报告提到了“睁只眼闭只眼”的一种变形技术：肘撑在桌面上，头放在拳头上。脸颊因这种方式的挤压而迫使一只眼睛闭上，而另一只眼睛则是睁开的。

  这种变形技术的另一个好处是：它表现出极端的厌倦。这为那些希望在最近的会议上显示自己有老练打盹技术的人提供了巨大可能。在“睁只眼闭只眼”的打盹中，完全不需要太多的肌肉控制。（请注意，如果打盹者闭上了不在拳头上的那只眼睛，那么这就不符合“睁只眼闭只眼”的标准了。）

- **手指运动 转移注意力 (Diversionary Finger Movement)**
  这种技术只能推荐给擅长配合的资深打盹者。它的技巧是：手指在两只眼睛都闭住时保持运动。最常见的是，让手指握着铅笔或钢笔这样的小道具在前额运动。这种技术在深睡时会变得非常危险，新手不要尝试这种技术，除非他们积累有多个小时会议打盹的成功记录。

- **头后仰 (头朝后 Head Thrown Back)**　在演讲者极端枯燥或者极端博学的情况下，你可以选择这种技术。使用这种技术时，打盹者的头完全后仰，仿佛盯着天花板沉思。采用这种技术的最大困难是使用者必须经过大量的训练让身体能保持平衡。事实上，建议你不要采用这种技术，除非会议椅子后背具有适当的高度以保护你不致于向后摔倒。

在所有这些专业活动中，在成功的打盹艺术中，有些事情必须竭尽全力避免。最重要的是不要打呼噜。人们普遍认为，打呼

噜是深度睡眠的象征，尽管最近在这个问题上还有分歧，但昏昏入睡者不会被认为是在打盹。

请注意，即使你成功打了一次盹，然而一些动作还是会出卖你。最糟糕的是打呵欠。打呵欠的行为不可原谅。而且，在成功打盹后四处张望，看看是否有人在注意自己，则是绝对糟糕的做法。打盹本来是应该避免的，但它总比身体完全失控导致头靠在桌子上或从椅子上跌下来要好一些。（如果后一种情况发生，那么最好的方法是立即站起来并迅速走出会议室。）

老练的打盹者会在演讲人结束时提出一个适时而无甚意义的问题，但这时他会发现自己的打盹因此而众所周知。准备一些适当的个人保留问题库是重要的，但部分放之四海而皆可的问题可作为你的参考：

- 从长远来看，你认为你得出的结论对整个领域有什么重要性？

  （如果你决定提这个问题，那么你必须是演讲结束后第一个提出者；否则，其他没有打盹的人可能已经提了这个问题。）

- 你这句话具体的意思是什么？

  （选择演讲题目中的一个单词或你打盹前听到的第一句话。）

- 你如何将你所阐述的结果与…所做的研究相协调？

  （提一个领域中众所周知的最著名科学家的名字，或谁也不知道的名字。）

对你来说，参加国际会议是一件幸运之事，尽管有本章中关于成功打盹的建议，但是你还是应该让自己在整个会议过程中保持清醒的状态，除了倾听演讲你还会发现一些非常有趣的事。你可以通过观察其他打盹者来让自己轻松一下。如果你发现了其他成功的打盹技巧，请与本书作者联系，以便在本书的下一版中将他们加入进来。

后　记

今天，我们这个世界上有 60 多亿人口生活在 200 多个国家中，有 6000 余种语言和约 2260 种书写体系。令人惊异的是在如此丰富多彩的语言中，英语为世界范围的交流提供了目前惟一的可能性。

也许，当语言学家们最终解开了语言和思想间奇妙而错综复杂的关系时，我们可能会知道英语的使用如何提高、改变或抑制了科学思想。目前，当我们使用英语进行科学交流时，我们究竟得到了什么？又失去了什么？对此我们知之甚少。

无论喜欢与否，英语已经成为科学的罗塞塔石碑。所以，如果我们之间要准确地理解对方，那么现今的科学英语必须变得更直接和清晰。这意味着不仅你需要更加努力，而且意味着所有英语母语的科学家在用英语与一位国际科学家进行书面或口头交流时，必须主动放弃对地方性、丰富多彩而且常常是神秘的英语习语的使用。随着国际化的发展，科学英语也成为我们互通的语言，我们用它来分享新的科学发现，我们热爱的地球将受惠于此。

然而，我们不能在专注于准确交流宝贵的科学信息的同时，失去存在于故事、戏剧和诗歌中的其他所有语言的思维方式、激情和美妙。它们是保持科学生命力的营养，没有它们，科学将失去想像。

英文原文部分

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Introduction

The Rosetta Stone, key to the original deciphering of Egyptian hieroglyphs, has probably been the most famous language inscription on the planet. This massive piece of polished black stone, discovered in 1799, contains parallel messages in old Greek, hieroglyphs, and demotic, a cursive form of hieroglyphics, chiseled into its surface. Twenty-four years after its discovery linguists finally completed the decoding which permitted the people of the world to understand the writings and culture of ancient Egypt.

> *O, wonder!*
> *. . . O brave new world.*
> *That has such people in it!*
>
> *– Shakespeare*
> *The Tempest*
> *Act V, scene i*

Today the giant stone rests in the British Museum, waiting to inspire all scientists to translate their research results into a language that can be widely read. This is important for all of

us because the science done in every country deserves reading by as many other scientists as possible.

Your personal Rosetta Stone for translating your science for others now has English as well as your native language inscribed on it. Native speakers blush in embarrassment but the world language today, the *lingua franca*, is English.

OPTIONS OTHER THAN ENGLISH

What? English? English, that complicated, irregular, jumbled, polyglot of a language? Surely there are finer languages:

- Why not German, the language once essential to any scientist who wanted to keep informed? German, a language which cannot be mumbled or slurred as native speakers daily do in English. German, which requires us to bend our mouths and tongues to the precision of its vowels and consonants and rewards us with the consistent spelling English lacks.
- And whatever happened to elegant French? Why not continue to give the world the fluid grace of French, with its consistency, sophistication, and mournful-sounding vowels?
- Why not Arabic, supremely expressive, with the world's most beautiful writing system?
- How about Russian with its passion and depth?
- Would it not be wonderful if science could have the orthographic efficiency of Japanese?
- Or if we all embraced the warmth of Spanish, with its smiling /ee/ sounds that almost hurt the cheeks with happiness.

- Or Hebrew, a language in which one can argue for hours and hours.
- Probably to be fair we should choose Esperanto so that everyone would be equally disadvantaged!

No, sorry, but despite all these and many other appealing options, the world, bar some unforeseeable catastrophic political development, is stuck with that most awkward of all languages, English. Perhaps this is evidence that the universe has a sense of humor.

It is linguistically illogical, but English has now become the Rosetta Stone of science, the language used to translate the science of the world into communication for the whole world.

Most of us learned classical English in school. Many of us learned it extremely well. However, trying to publish in science using the English we were taught in school is like trying to unlock one door with the key to another: the door never opens. English today is startlingly different from the English we learned in school, and, to make it worse, English is changing more rapidly today than ever before (Crystal, 2001).

> *To learn another language is to develop another soul . . .*
> *– Czech proverb*

A BIT OF HISTORY AND A WARNING

English has been adding words, adding new expressions, and changing meanings at an astonishing rate. This has been an exponential change post World War II – an expansion

and change not seen since the language explosion of the 1100s–1300s. The English college dictionaries of the 1940s added words such as cybernetics, genocide, globalism, H-bomb, TV, radar, and accepted the use of a number of nouns as verbs; the 1950s added antimatter, bionics, ecosphere, microcircuit, nanosecond, and took in multiple words from other languages; the 1960s added biodegradable, jet lag, macrobiotics, megabyte, microchip, quark, and modified words to overcome cultural bias. In the 1970s the rate of new words in English increased even more rapidly as the language enlarged to include not only new technology but new social concepts.

By the 1990s communication through the Internet began what now appear to be irreversible changes in simplifying English through acceptance of more abbreviations, acronyms, and the non-alphabetic symbols now common in what David Crystal (2001) calls computer-mediated communication. English has always assimilated concepts and consequently words from other languages: 'tycoon', 'sheik', 'salsa', 'mocha', 'macho', 'pizza', 'steppe', 'rodeo', 'karate', 'sofa', 'mariachi', 'vodka', 'jihad', 'mullah', 'perestroika', 'Sandinista', 'burka', 'karaoke'. No end of this is foreseen by linguists.

ENGLISH TODAY

English today is a rapidly developing language, deeply influenced by Internet communication. As early as in the 1997 edition, the preface to the conservative *Random House Webster's College Dictionary* refers to the English language not as English, nor British English, or American English, but as 'world language'. By 2005 English had become the:

- language of international air traffic,
- favored language of diplomacy,
- lingua franca of the Internet and the World Wide Web, and
- language in which the world's best scientists need to publish.

> *At one time international English was limited to 'Hi', 'OK', 'Coca-Cola', 'Fanta', and 'taxi' . . .*

Change has been accelerated by the growth of the World Wide Web and the increasing pressure for rapid, clear communication via email. Use of tense has been becoming less complicated and less subtle in meaning. [See Chapter 4.] Today simple present tense and simple past tense are most common and the subtle, conditional, easily misinterpreted tenses involving words such as, 'should', 'could', 'would', 'might', 'may', 'can' are only seen infrequently.

Characteristics of English

One of the qualities that contributes to the ability of English to become a world language is that English is generous (many would say overly generous) in its acceptance and invention of new words and is quite nonchalant about changing syntax whenever traditional grammar gets in the way of cultural change. Writing about recent changes in the English language, one of the world's foremost authorities on language calls the current development a 'linguistic revolution' (Crystal, 2001). However, whether the current change is a revolution; whether it isn't; whether we like it; or whether we loathe it: English has changed and is continuing to change. It

is no longer the English we learned in school or the English of yesterday's science journals.

Much of our training in English has encouraged us to learn to write in elegant, beautiful, often complicated ways. In school we gave our best efforts to produce words that would add glory to our meaning and delight to our teachers' hearts. Unfortunately this is not the way to the hearts of editors of today's science journals.

Please don't despair. Even if flowing exotic language is, unfortunately, not a good way to report research results, it is still a splendid way to write short stories, novels, and poetry. Perhaps English literature will forever have stirring pages filled with fiery words designed to inflame a reader's soul or poetry of soaring words intended to make one drunk with beauty. But these are not the words in which to report scientific results. Instead research is best served as if it were a meal, carefully prepared, arranged in an exact manner on a plate, and served cold.

Science Writing Today

Successful scientific writing today is done in a simple and direct fashion. First, the sequence must be precisely organized – not an easy thing to accomplish because so many things at first seem to need to be said simultaneously. Second, every sentence must be worded so that it is clear, with no alternate meanings available to innocent readers who were not in the lab with you, and therefore must rely only on the accuracy of your words.

Chapter 1

This book is designed to help non-English speaking scientists go beyond the knowledge in the weighty volumes of grammar from which they learned and:

- translate their scientific results into clear contemporary English,
- write articles suitable for publication,
- present their ideas at conferences, and, above all,
- maintain their joy of life.

> *These our actors,*
> *As I foretold you, were all spirits and*
> *Are melted into air, into thin air;*
> *And like the baseless fabric of this vision,*
> *The cloud-capped towers, the gorgeous palaces . . .*
> *– Shakespeare*
> *The Tempest*
> *Act IV, scene i*

PART I

Writing Research Articles for Publication

Every scientist in the world who is doing valuable research owes it to the world to publish clear, concise results. Only when these are published internationally will other scientists doing similar research be able to know what is being done elsewhere.

Part I contains information about the art of writing articles for publication to help you get published in an international journal.

- Chapter 2 gives you a model for self-analysis to help you construct a data bank that will give you the detailed help that fits your own individual writing needs.
- Chapter 3 guides you in ways to edit your writing successfully.
- Chapter 4 explains recent changes largely due to the influence of the Internet, and suggests new changes that are coming.
- Chapter 5 deals with writing abstracts, proposals, and cover letters.

The fact that we speak and write to each other in English does not mean we should conduct our mental explorations in English, for other languages may have patterns of thought vital for the future development of science. So let scientists communicate among countries in English but without losing the riches within their native languages.

– 2 –

The Art of Creating a Model to Help You Write

Models for writing science today cannot be found in grammar textbooks, most of which were published too long ago. Nor are they taught by English teachers who were educated some years ago by teachers educated before them and using texts written even earlier. None of these formerly good sources are helpful for writing scientific articles in today's rapidly changing, dynamic English. Actually, few, if any, of us received English instruction specifically designed for writing science.

Those of us who know how to write for science journals taught ourselves, slowly, and usually after several failures. In school we were taught how to use correct grammar and to write traditional, formal, English narratives. Our teachers taught us how to use allusions, metaphors, creative adjectives, and graceful expressions. We labored to produce lengthy, flowing language to delight our English teacher's heart. Unfortunately this is not the type of language that delights the hearts of science editors.

> *Think, when we talk of horses, that you see them?*
> *– Shakespeare*
> *Henry V*
> *Prologue*

Editors of science journals today want all ideas in language that is directly to-the-point, straightforward, and in as few words as possible. They want everything expressed with such clarity the science will be clear to all their readers. When your work is published, people all over the world will be reading your article. You not only want the meaning to be clear to them, but you want to represent your country well.

Today's science journals receive many articles reporting good scientific research but written in poor English. If the English is poor enough, the article is rejected; if the English is good enough, editors will decide whether or not the research is worth publishing. If the research seems worth publishing despite the poor English, the journal will sometimes have the article edited to make it acceptable, but this is becoming less common. The most common response of editors is to reject the paper.

> *Good prose is like a window pane.*
> *– George Orwell, 1903–50*

Science editors grieve over their lack of time and people to edit the English in their journals, because it is vital to them that their language standards are high. However, even with their continuous effort to publish only good English, the pressure to publish new research developments as rapidly as

possible permits some poor language to appear in even the best science journals. This is tragic for two reasons: First, everyone wants the articles in widely-read journals to be understood clearly by readers all over the world, and second, no one wants new research to remain unpublished because editors simply did not understand the English in which it was written. Currently it is possible for good scientists in some countries or institutions to acquire an unwanted reputation for writing poor English. Don't let this happen to your country or institution. You are going to teach yourself to write so well that future editors will respond in joy when they see an article written by someone from your country.

Now, you ask, where can you find a model to help you write? Fortunately this is easy to answer.

FINDING DATA FOR YOUR MODEL

The very international journals in which you desire to be published contain the data for your model. Although the editors of such journals are seldom willing to edit any of the English sent to them, you can use their expertise if you are clever. The recent research articles in their journals have passed their standards and await your analysis. All you need to do is to find articles written by native English speakers and published in recent international journals. In these articles you will find gold mines of excellent information about contemporary scientific English: In them you can find excellent, up-to-date teachers who can be found nowhere else.

Each issue in every well-known, international, English-speaking journal contains several research articles written by authors at

least one of whom is a native English speaker. Each of these presents excellent information to use in your own writing. They lie before you, waiting for you to turn on your analytical skills. The friendly, personal model for contemporary scientific writing that can be created using this information would be of help both to scientists who are not native speakers of English and unpublished scientists who are native speakers.

Your goal will be to get help from the language, not the science, in the articles. The first trick will be to insure that you have chosen excellent articles. The science of every article in a reputable, well-known international journal is sound, but the language may not be. So how will you know if you have found articles which will help you create a good model?

> *I see you stand like greyhounds in the slips,*
> *Straining upon the start.*
>
> *– Shakespeare*
> *Richard III*
> *Act I, scene i*

Characteristics of the Articles You Want to Find

In order to be worth the time you are going to put in analyzing them, articles you choose must have three basic characteristics:

- Each must be published in well-known international journals. Good examples of journals you might consider include: *Science, Nature, Biochemistry, Journal of the American Chemical Society, Angewandte Chemie, International*

Edition in English, Physical Review, Scientific American, and other highly-respected international journals specific to your field.

- Each must have been published within the last 3–5 years, no longer ago, sorry. Remember scientific language is in a rapid change process.
- Each must have at least one author who is a native speaker of English. This is particularly important. Usually the first author's name listed is the author most responsible for the writing, but not always. If one of the authors is a native speaker of English, probably that person has at least edited the writing. If none of the authors appear to be native speakers of English, the information about the data you draw from the structure of language in the article may easily be misleading.

All three of these characteristics are necessary so that the articles you choose will give you good data on the use and style of language. Surprisingly enough, you do not need to be concerned with the actual scientific content of the articles. Although the closer the article is to the science you do, the more specific language help it may yield about the language for specific procedures and results, this is not a vital characteristic of the articles you choose. You are searching for excellent material from which to create a good model.

CREATING YOUR MODEL

You are about to learn how to create your own system for analyzing the language used today in successful articles. Luckily, you are the type of person who can do this because you are

a scientist, and scientists analyze well. First of all, by using a keen eye as you begin to study the language structure of current articles in international science journals, you will discover new things you may not have noticed before. You will realize:

- Science calls for a sudden narrative.
- Successful articles are dramatic stories told in as few words as possible.
- Above all, in the voice of science, clarity is crucial.

Your first step is to photocopy 1–3 articles all of which have the three characteristics mentioned earlier. Next you are going to design spreadsheets, either on paper or in your computer, on which to put the data you collect from the articles. Typically the kinds of information these spreadsheets contain include data on:

- Length and variety of sentence structure, including frequency of prepositional phrases.
- Use of transitions, direct and implied.
- Appropriate choice of verbs.
- Verb tenses.
- How articles begin and end.
- How and when to give credit to other researchers.

The actual topics you use for your spreadsheets, and the number of spreadsheets you make, will depend on the type of help you need and upon how sophisticated your English is. Someone else's spreadsheets would probably be of little or no value to you. However, here is an explanation of the type of data found on some typical spreadsheets:

Spreadsheet #1

This spreadsheet may contain notes on the lengths of sentences in the articles and on the variety of sentence structures. For example, check how frequently sentences start with the subject. Make notes about what words or structures sentences start with when they do not start with the subject. Write down particular structures that catch your eye as effective. Notice how infrequently prepositional phrases are used and when they are used. You may want to eliminate a number of irrelevant ones you find in your manuscript.

Spreadsheet #2

This spreadsheet may list and explain the transitions you find in your articles. Good use of transitions is vital to a well-written article, but good writers only use transitions appropriately. Make notes on when the transitions are used and notice how the meaning of the transition fits the meaning of the sentence. Check how frequently transitions are used and if the same one is used repeatedly or consecutively. [Table 3.1 displays some common transitions]

Spreadsheet #3

This spreadsheet may contain a list of appropriate varieties of the verbs you find along with notes about the situations in which they were used. Finding correct, varied, and interesting verbs to use in sentences about research procedures is one the most difficult writing problems a scientist encounters. The accuracy of the meaning of your sentences and paragraphs

will be driven by the choice you make of verbs. This list will be valuable to you. Use it and keep adding to it.

> *Though this be madness, yet there is method in it*
> *– Shakespeare*
> *Hamlet*
> *Act II, scene i*

Spreadsheet #4

This spreadsheet may be a valuable tabulation of the verb tenses used in today's journals. Keep notes on how commonly the simple present tense occurs and also of any exceptions when the simple present tense is not the tense of choice. You will need this data especially after you finish writing your paper and are ready to edit it. Accomplished writers usually check the consistency of their verb tenses as the last step in polishing their manuscripts for publication. Remember not to pay attention to other language problems at the same time you check for tense consistency because, if you do, it will distract you from doing a thorough job.

Spreadsheet #5

This spreadsheet may contain helpful notes about the ways the articles you photocopied begin and how they end. Early and last sentences in articles are important. Check how these are written. When you finish writing your paper, turn to this spreadsheet again. You will compose a much better – a simpler and more direct – beginning after

you have finished writing your paper than you will at any earlier point. Endings must be sensitively written for it is here that some authors make greater claims than their data support. Avoid doing this.

Spreadsheet #6

This spreadsheet has valuable information about giving credit to other research and other researchers. Study your articles carefully to see how, where, and when this is done. Your professional reputation in science may depend on the accuracy with which you give credit to others.

USING YOUR SPREADSHEETS

The spreadsheets are your model. Begin to use them by organizing the information on the spreadsheets in such a way that you can refer to them easily. Then as you begin writing you will keep an ongoing sheet of particular words or phrases about which you need more information. Perhaps you will make further spreadsheets, which will extend and complete your model for writing a successful scientific paper. Keep the spreadsheets. Use them. Modify them by adding new information and discarding data you find you no longer need.

Anytime you have a question about the written presentation of a certain idea, your spreadsheets should help you. If your spreadsheets are not sufficient help, a careful scan of a relevant published article written by a native speaker of English should provide what you need. Even writers who do not keep spreadsheets usually have their own personal lists of

appealing words and phrases with notes of where they were found and how each was used.

> *If we knew what we were doing, it would not be called research.*
>
> *– Albert Einstein, 1879–1955*

YOUR FIRST DRAFT

The first draft can be written partially or completely in whatever language is easiest for you. It does not need to be written in English because the purpose of a first draft is to establish the skeleton, the bones, of your article. Your goal at this point is to get all your ideas down and, especially, to establish the sequence of ideas. While you are writing the first draft, whether it is in another language, partly in English, or completely in English, you should mark it with a private code which will help you write your next draft.

A Private Code

A private code involves putting personal annotations on the text as you write. Some writers do this by:

- Underlining words, phrases, and sentences.
- Using bold font.
- Leaving blank areas in the middle of sentences, or a series of symbols such as stars.
- Using symbols or words in another language.

A private code is a sort of map of the thinking you do as you compose the first draft. It is your way of talking to yourself about what needs help without forcing you to slow down and fix it then. A private code permits you to continue writing down ideas even when you are aware the language is still incomplete.

Good writers have learned that pausing to look up words or checking data while they are writing slows their cognitive flow down and inhibits getting a clear sequence of ideas on paper. Further, good writers have found that when they write without marking a manuscript with a private code, they often mislead themselves into later thinking a piece of poor language is fine, and then they embarrass themselves by inadvertently carrying it on into a final draft.

Whatever code you invent, your intention is to mark places so that you can return to them easily when you write a second draft. Design a code that covers positives as well as negatives. The positives will mark places you felt confident about in your first draft, and knowledge of what you thought was good is as important as knowledge of places which need more work. Usually a private code is applied in computer symbols or fonts that are easily recognized later, but some writers print the draft first and then apply a private code in pencil or ink. Either way works as long as a map of the writer's thinking is provided which will aid the writer in the rewriting process.

So, invent your own private code. Keep it simple. Modify it a bit when you first use it but then stick with it. Memorize it. Write it down so you can't forget it between papers. Avoid changing your code drastically or changing your system between manuscripts. Changes may then cause your private code to end up confusing you more than helping you.

Organizing the Sequence of Your Ideas

The sequence in which you present your ideas is basic to the success of your paper. Attempt to get the sequence established before you begin the actual writing of the paper. This sounds easier than it is. Organizing a clear, lucid sequence can be difficult because in scientific research a number of things appear to need to be told simultaneously. Since they cannot be told simultaneously, this is beyond doubt the most difficult part of writing a first draft and one that needs to be solved before you start to write. If you do not get it solved, you may commit the worst possible crime in writing a research report which you hope to get published, namely your paper may contain repetition.

In order to accomplish a sequence which is clean, precise, and without repetition, you might consider using a pre-writing technique called 'story board' often used by newspaper reporters and detectives. In this technique, each idea is written separately on an index card, a piece of paper, or a post-it. Index cards are the most versatile: They can be arranged and rearranged in sequences as you search for the most logical order. They can be carried in a pocket and the logic be reevaluated until you can commit to a solid enough sequence to begin a first draft. When pieces of paper or post-its are used, they can be posted on a wall where you or you and a colleague or two can agree on a good sequence. At that point the cards or paper are numbered, and keywords can be written on them to help with the writing. You might even put each idea into a rudimentary sentence, but getting the sequence into sentences is not important yet. What is important is to organize a sound sequence in which ideas do not repeat and each event is in a logical order.

Completing a First Draft

In the first draft you should put little effort into details such as getting vocabulary right, guarding against repeated language, checking tenses, evaluating transitions. Instead, whenever you fear you may not be making a good choice, use your private code to mark the place, and move on. At this point you should not be interested in polished language. You have now completed a first draft. It is far from a finished manuscript but it is an accomplishment of which you should be proud. Take a break of several hours or overnight before beginning a second draft. You need to give your mind a rest and chance to gain perspective, yet not give yourself so long that you will have forgotten the thinking you did during your first draft.

Four problems in manuscripts have caused innumerable papers to be rejected. Before you go beyond your first draft, check your plans against these deadly sins:

- The scope of the manuscript is too broad; this material should be divided into 2–3 papers and resubmitted.
- The claim of this manuscript goes beyond the given data.
- The manuscript is too lengthy, includes unnecessary details such as an overly long review of history, or redundancy.
- The authors have failed to give appropriate credit to others.

THE NEXT DRAFTS

In your first draft you established the sequence of ideas and events. Now, determine where you should use paragraphing to help the reader understand the divisions of your sequence.

Next, check all the places in your first draft where you used your private code. Replace all non-English words and refine the problems. Begin to turn to your spreadsheets for help. Work with them in whatever order you prefer, checking carefully through your manuscript with each spreadsheet and rewriting as you go.

> *Once more unto the breach, dear friends, once more;*
> *– Shakespeare*
> *Henry V*
> *Act III, scene i*

Even a highly skilled writer, who is a native speaker of English, does not write a successful paper in a single draft. All successful articles undergo a number of drafts before they are ready to be sent to journals. In each draft you will continue looking back at the information you have on your spreadsheets, checking, rechecking, and rewriting. Possibly your spreadsheets will not contain enough information and you will need to turn back to the articles you photocopied for further help.

In all these next drafts, most of your attention will be on transposing your entire first draft into simple, straightforward, English sentences. Keep sentences short and direct. A wise Australian journal editor once said a complicated sentence is like a stressed molecule. So, resist all temptation to try for long or beautiful sentences: You can lengthen sentences later; you can add grace later; you can combine ideas and add transitions to smooth out the meaning later. It is vital to keep your ideas direct and simple. Remember scientists all over the world are eager to be able to understand what you report; help them out. Speak to them simply and directly, scientist to scientist.

Do not worry at this point that what you have written may sound simplistic. On one level, you want your writing to be simplistic because being simplistic means being clear and you want everyone to be able to understand what you have written. As you continue on to the intensive editing in your final draft you will get variety in the choices of vocabulary, transitions, and sentence structure so that your article sounds smoother and more interesting. Your main goal will be to ensure that the ideas in each sentence:

- would be clear to any other scientist in your field,
- are referenced properly wherever credit should be given to others,
- do not bore the reader with historic or other types of details that are not directly related to the topic of your article, and
- do not insult the intelligence of your readers by over-explaining the obvious.

YOUR FINAL DRAFT

Now, at last it is time to create the final draft in which you edit your manuscript, to make it as good as you have dreamed it could be. You are ready to practice the art of editing.

> *To unpathed waters, undreamed shores.*
>
> *– Shakespeare*
> *Winters Tale*
> *Act IV, scene iv*

– 3 –

The Art of Editing What You Write

> *"Without editors, writers are nothing but makers of lace."*
>
> *– C. Shields (2003) Unless, Random House of Canada, 177*

Who will help you edit? Certainly not editors of scientific journals: Editorial staffs of journals do not provide this service. They will return your paper, often after only reading enough to see that the style of language you have used does not fit that of their journal. If you get any advice, beyond a simple rejection, from the journal to which you send your paper, it will probably be a sentence telling you to get language help for your paper.

How does this affect you and what can you do? First of all, many amateur or unpublished writers take their writing far too personally. Whatever is said about their writing they take to apply to them as a person – as a scientist. Don't do this, for if you react this way, you may never get a paper in good enough shape to be published. The quality of your writing

does not reflect on your intelligence or your worth as a scientist, only on one of your skills.

> *Now is the winter of our discontent . . .*
>
> *– Shakespeare*
> *Richard III*
> *Act I, scene i*

Second, as a writer of science you need to realize that what you write is a product: A product similar to a cake a baker mixes together and bakes. The success of the cake depends on the quality of the ingredients, the quantity of the ingredients, the sequence of putting them together, and a tender touch. When the cake turns out well, we congratulate the baker. However, when the cake does not turn out well, we do not think badly of the baker as a person, only as a baker of cake. To get a manuscript published you must learn to edit your manuscript several times with colleagues, and do it carefully, or else stop – so to speak – trying to make a cake.

Third, remember that writing is a social activity. Even when you write alone, writing is a social activity, because you are always writing for an audience of readers, seeking their understanding. You need others to reassure you that your manuscript is written so that all readers will understand each of your points.

FINDING EDITING HELP

Where should you go to get editing help? Professional editors who are not scientists and are unfamiliar with your

type of science can be extremely undependable in their choice of improvements. Their ability to edit the kind of English used in newspaper reporting, essays, novels, and personal letters may be excellent, but they are not knowledgeable about the way language is used to report research in science journals. Other services devoted only to science are often of little better help because even they often lack specific knowledge of your particular field. So beware, and, if you choose to use a professional editing service, wherever there is a disagreement between what the service suggests and what your spreadsheets tell you, trust the spreadsheets. [See Chapter 2 for information about spreadsheets.]

You will need help in order to edit your paper well. Few successful writers of science edit alone. In fact few of them even write alone. They write in teams and edit for each other. No one writes or edits well enough to work alone: The English language is too slippery. You need other eyes and minds to help you. Most scientists edit with a colleague; some with two colleagues although working with more than two others can create more chaos than help.

> *I will wear my heart upon my sleeve for daws to peck at.*
>
> *– Shakespeare*
> *Othello*
> *Act I, scene i*

You need to make a careful choice of the person, or people, with whom you write or edit. You must know and trust each so well that you will not take their comments and questions personally, keeping foremost in your mind that all suggestions

are meant kindly and intended to improve the clarity of the science. In turn, the person or people who work with you must trust you: They must believe that you will not be personally offended by their suggestions.

You will be wisest to set up such a confidential editing system with someone who is your peer, not someone who is your superior, or someone who works under you. Ideally you will find a peer or peers also writing papers so that you can form a team of writers who edit for each other. Computers now allow us to write and edit with peers in other institutions, which opens up more possibilities for collaboration and good editing than ever before.

Attempt to meet with your other colleagues at conferences or for coffee at their institution because friendship is an important part of maintaining the openness and trust required for editing to be successful and completed in a timely fashion. Remember you can only be helped by someone who:

- trusts you to be open to both positive and negative criticism,
- is capable of giving both positive as well as negative criticism,
- knows your work well, and
- is familiar with the type of writing in the journal in which you plan to publish.

A team of people to write and edit with may be hard to find and coming to a workable agreement with them will require both personal and professional effort. However, writing is too social an activity for us to be able to receive the kind of help we need, and the kind we can understand, from people who do not know us or our research.

> *Then say at once if I maintained the truth;*
> *– Shakespeare*
> *Henry VI, Part I*
> *Act II, scene iv*

ELIMINATING UNNECESSARY LANGUAGE

English in itself, due to its grammar, is a redundant language and writers who want to be respected as well as to show respect to their readers, make every effort to avoid all unnecessary language. This means you must edit out any words, sentences, and phrases that are not essential to meaning.

Repetition & Redundancy

Editors tell us that repetition (directly repeating the same words) and redundancy (indirect repetition through alternate phrases or synonyms) are common flaws in rejected papers and that these are particularly common in the writing of scientists whose native language is not English. Unfortunately repetition is even less tolerated in science journals than it was years ago. It is understandable that repetition is a language trap easy to fall into because English has a richness of synonyms plus almost endless varieties of syntactical structures for expressing identical thoughts. Therefore writers can easily convince themselves that they are not repeating but merely emphasizing points and making them clearer. However editors have quick eyes for all forms of repetition and they don't respect any of them.

You get to make a point once and only once. You can make it clearly and powerfully by your careful choice of succinct language, but you only get to say it once. Ideas, no matter how important, how complicated, or how innovative, are not restated or rephrased within the body of a research article. The only acceptable repetition occurs in a final summary where vital information can be briefly restated without detailed explanation.

> *Most writing, untouched by editing, is banal and repetitive.*
>
> *– A. Eisenberg, Scientific American, December 2001, p. 97*

Repeated Vocabulary

Repetition of the same non-science vocabulary, especially verbs, will make your manuscript dull. Replace some repeated non-technical words with alternate words that will mean the same and often be more accurate. Do this for all non-science vocabulary by setting your computer to scan your article to show how often you have repeated an interest-adding word or phrase.

Note that a thesaurus is a dangerous source for finding an alternate word to use. English is both too subtle and too complex for a thesaurus to be a safe tool. Your only reliable information is in your spreadsheets and the articles you photocopied. If neither of these contain the vocabulary you seek, find other recent articles written by native English speakers, photocopy them, and add data from them to your spreadsheets.

A final warning: After you have seasoned your manuscript with more interesting language take care that you haven't

used a particularly eye-catching word or phrase more than once. Such words or phrases add spice to your writing, which is good, but they stand out prominently. So set your computer to find each of these. Choose the most effective place for each, and use each only once.

Unnecessary Explanation or Description

An important form of unnecessary language in a research article is the presence of additional information, which is interesting and fun to write but which is irrelevant to the results being reported. Through a careful use of your spreadsheets, you may have already eliminated this type of lengthy explanation, but, if not, you need to scan again to be certain your manuscript has avoided using:

- More background or history than the journal to which you plan to send normally prints.
- Too many details about what was done – or even worse, details about unsuccessful work.
- Information about other research your group has done.

> *Things should always be made as simple as possible and no simpler*
> *– Albert Einstein, 1879–1955*

Prepositional Phrases

Another common form of unnecessary explanation lies in the overuse of qualifying prepositional phrases, such as writing 'in our laboratory', when where the work has taken place is

obvious to the reader. Watch for extraneous information in prepositional phrases such as: 'by the researcher', 'during the research', 'on the table', 'in this group'. Remove all these irrelevant phrases as you edit. Note how few of these you were able to collect on the spreadsheets from your photocopied articles.

PASSIVE VOICE

Contemporary writing in science has become more and more direct and, as it has, the use of passive voice has been fast disappearing. Check your spreadsheets, or go back to the photocopied articles, to discover if you find verbs in passive voice. Change any you find to active voice, for examples see Table 2. The journals esteem active voice and direct statements.

You will want to check your final draft for sentences which begin:

- There are . . .
- There is . . .
- There was . . .
- There were . . .
- There has been . . .
- There have been . . .

Also check for all sentences that start with the word 'It' when 'It' is used without a referent as a generality:

- It was . . .
- It is . . .
- It has been . . .

Passive structures are easy, familiar structures to use, and they will probably aid your ability to compose freely, so use them in your early drafts. However change them when you edit so that the content of each sentence is more quickly available to the reader. Moving directly to what you have to say creates a stronger paper and one more likely to be published. [For examples of how to rewrite 'It' sentences see Table 3.1]

Table 3.1 Examples of Indirect or Unnecessary Language from Unpublished Papers

Indirect language	Direct, clear language
It will be the end of the year before we **can** expect results **to be ready**.	We expect results by the end of the year.
It was discovered **in our laboratories** that sulfur dichloride reacts with . . .	We discovered sulfur dichloride reacts with . . .
It is vital to recognize **the importance of the** variance among lengths of multiple bonds.	Recognizing variance in the length of multiple bonds is vital.
It is very important **to realize** that the **aforementioned** results are . . .	The results are important because . . .
If my group **had been able to**, we **would have** prepared the compound but . . .	We have not prepared the compound because . . .
There have been recent developments in NMR which allow . . .	Recent developments in NMR allow . . .
There are three molecular orbitals, **namely**, 1) . . . 2) . . . , 3) . . .	The three molecular orbitals are: 1) . . . , 2) . . . , 3) . . .

EMPHASIZING MEANING WITH INTENSIFIERS

The impact of messages becomes stronger when writers avoid the addition of intensifiers, such as 'really', 'actually', 'truly'. These words add an almost slippery flavor to a research report. Such words belong in narrative writing, and a reader who finds them in science may withdraw in suspicion. Check your photocopied articles to see if these words ever appear. The best advice is to eliminate them in your final edit. They are good words to use socially, and are fine even in professional letters, but they do not belong in research reports. Strange as it may sound, your scientific statements are stronger when you omit these ambiguous intensifiers.

The Word 'Very'

'Very' is another word everyone should avoid. It is not ambiguous as an intensifier, but it has become so trite that it is basically meaningless. 'Very' is so common that your writing is stronger if you omit it. You can consider using intensifiers that are more effective at adding emphasis, such as 'extremely', 'highly', 'strongly', 'surprisingly', but use all intensifiers infrequently or they will lose their power and sound unscientific.

Other Overused Words

Free your manuscript from other overused words which reduce the intensity of your message. Replace words such

as 'a lot' and 'many' with more specific meaningful words. You are a scientist; you can find specific words.

Also improve the impact of your words by omitting those that are not only overused but judgmental, such as 'good' or 'nice'. Avoid words that praise instead of explain: Good science explains not praises.

Exclamation Marks

Exclamation marks are seldom if ever seen in professional writing and certainly not in research reports. Instead you must make your emphasis clear by a careful choice of vocabulary. Some languages use exclamation marks in their scientific writing. English does not.

Remember if you leave an exclamation mark in, the journal will delete it so do them a favor and delete it yourself. Again, check your spreadsheet and photocopied articles to note that they do not contain exclamation marks.

CLICHÉS

Beware of clichés. Clichés are over-used idioms and using them is not respected in English. Although such phrases may seem to be colorful and certainly offer a seductive temptation to sound like a native English speaker, don't use them. They are considerably less effective than the simple direct words for which they stand.

Clichés in many languages are helpful, and in some languages preferred, but in English they are words once considered original and now regarded as trite. Clichés, in a language as dynamic and changing as English, quickly become so dated that reading them distracts people or, worse, invites them to laugh.

Familiar idioms which are so familiar as to have become clichés are of some value in informal conversation but not in scientific writing. Even in conversation, repetition of familiar descriptive phrases is not particularly respected or considered courteous. English speakers become slightly embarrassed for a speaker, and especially for a writer, who uses an overly familiar, out-of-date, descriptive phrase. Such phrases can seem slightly childish and the user may be thought to lack sophistication. Clichés are not appropriate in research reports. Table 3.2 displays some clichés from unpublished papers: The clichés are underlined.

WIT

Do not confuse clichés and wit. Scholarly wit is highly valued in good scientific writing. However, using wit successfully requires a superb knowledge of the English language. Successful wit in a science article is accomplished through an avoidance of redundancy and a lively choice of words.

The short length and requirements of research articles seldom afford room for wit even in the hands of an expert. Unfortunately wit is culturally dependent, which in this case means achieving a successful combination of the culture of science and the culture of the English language. This is difficult indeed.

Table 3.2 Examples of Inappropriate Clichés and Unnecessary Words from Unpublished Papers

Inappropriate	Appropriate
Attempting **to do** this was **like** **<u>trying to put a square peg in a round hole</u>** . . .	Attempting this was difficult because . . .
<u>In high hopes</u> we **studied** the spectrometer printout and found . . .	Results of the spectrometer reading indicate . . .
Darwin's **<u>tried and true</u>** method of . . .	Darwin's method of . . .
We believe that **sooner or later** these results will . . .	We believe that these results will . . .
We are pleased to be able to report that the structure . . .	The structure is . . .
The findings **of the results of the study** show . . . **that** the end product **has** indicate**d** . . .	The end product indicates . . .
The product is **<u>black as coal</u>** . . .	The product is an intense black color.
This result is **<u>the cherry on top</u>**.	This result adds to the evidence that . . .
This result is **<u>beyond our wildest dreams</u>**.	This result encourages us that . . .

TRANSITIONS

Transitional words and phrases are valuable within and between sentences. However overuse of any of them will weaken your final draft. Use as many of them as you want in

your early drafts. In early drafts these are an aid to you because they tend to tighten up and guide your thinking. However in the final draft you need to check carefully to see:

- How many you have used; and
- Whether or not you have used them in places where the meaning requires them.

> *An honest tale speeds best being plainly told*
> *– Shakespeare*
> *Richard III*
> *Act IV, scene iv*

'Smoothers'

Some transitional words or phrases function as smoothers: They smooth the way between sentences in which the logic flows in an expected direction. Although a transition word or phrase is not required when the meaning continues on as expected, a judicious use of such optional transitions smoothes readers' ability to follow along as your writing moves from idea to idea. Use of optional transitions is easy and natural for most writers. However, overuse of smoothers will weaken your writing and distract your readers. Check your photocopied articles for how often successful authors use them. [Figure 3.1.]

'Contradictors'

On the other hand help from transitional words or phrases is usually required when a sentence or paragraph contradicts

- furthermore
- in addition
- first, second, third, etc. (archaic: firstly, secondly, thirdly etc.)
- finally
- lastly
- moreover
- incidentally
- in fact
- in truth
- as a matter of fact
- for example
- such as
- next
- then

Figure 3.1 'Smoothers': Transitions that Continue an Expected Flow of Logic

- but
- however
- instead
- nevertheless
- despite
- surprisingly
- in spite of
- in contrast
- for comparison

Figure 3.2 'Contradictors': Transitions that Indicate Change to an Expected Flow of Logic

the on-going logic of the previous idea. These transition words or phrases are seldom optional. [See Figure 3.2.] They serve to warn the reader that the direction of the logic is about to change.

'Explainers'

Explainers are transitions used to show cause and effect. These transitions are sometimes optional and often occur in the middle of sentences. They are especially valuable to signal that you are giving results or conclusions. [Figure 3.3.]

Guidelines for Editing Transitions

Three general guidelines can help you when you edit your use of transitions:

- If a current reputable journal article written by an English speaker uses the term, it is probably a good choice.
- The role of transition words or phrases is to clarify the meaning to readers. This is their only role.
- Using transitions more than 10–12 times on a full page of text is apt to interfere with, not help, the readers' comprehension.

- because
- as a result
- therefore
- in general
- consequently
- as predicted
- in conclusion
- since
- as
- for
- finally

Figure 3.3 'Explainers': Transitions that Indicate Cause and Effect

Dated transitions

Transitions that have gone out-of-date include phrases such as 'as was mentioned earlier', 'the aforementioned', 'the authors would like to say' and any other phrases that remind an otherwise intelligent reader that the content has already been stated, or will be stated later. In current thinking, these old-fashioned phrases mildly insult the reader and interfere with comprehension. They should not be used.

EDITING VERB TENSES

The final and most tedious edit is to examine each verb tense in the paper for agreement and consistency. This should be done after all other revisions and edits have been made. While you are conducting this final tense check, do not let yourself pause to consider anything else in the manuscript. Even teachers of English easily overlook inconsistencies in tense when they let their concentration stray while they are doing a tense check.

Present Tenses

Simple Present Tense

The most common tense in scientific writing today is the simple present tense. All results, whether done today or years ago, are referred to in present tense. The implication of this use of the simple present tense is that the finding is an all-time truth, which would occur again were the experiment

repeated. In contrast, using the past tense for a research result may imply the finding is no longer true.

Check your spreadsheets and photocopied articles to discover when, or if, a verb is used in any form other than the simple present tense. Add these examples to your spreadsheets along with the apparent reason for the unusual tense. Decide to make the simple present tense your friend.

> *If at first, you don't succeed, try, try again*
> *– German proverb*

Present Progressive Tense

Non-English speakers should be especially suspicious of being a friend of the present progressive tense, i.e. forms of the verb 'to be' followed by a verb plus '–ing'. Foreign speakers of English tend to use this tense far more than native speakers of English. Progressive tenses are fine in conversation, narrative writing, and letters, but they are seldom found in professional or scientific writing. Reserve the present progressive tense for those highly unusual times when you must emphasize the event is in progress right now. [Tables 1 & 3.]

Present Perfect Tenses

Present perfect tenses can be not only correct but quite elegant in research reporting. However the perfect tenses are seldom required, and they do require more language knowledge than the simpler tenses. [Tables 3.1 & 3.3.]

Past Tenses

Past tenses are also commonly used in scientific writing, but only under certain circumstances.

Simple Past Tense

Present past tense is used to refer to what was done during laboratory work. Within a research article, the use of simple past tense to explain procedures is usually the only exception to the use of simple present tense. Other uses are no longer common and you should check your spreadsheets and photocopied articles for more information. [Table 3.3.]

Past Perfect Tenses

Past perfect tenses can also be appropriate, but the simple past tense is safer and often better.

Table 3.3 Examples of Inappropriate Tenses from Unpublished Papers

Inappropriate Tense	Tense Preferred in Science
Sodium **is reacting** with water.	Sodium **reacts** with water
Sodium **reacted** with water	Sodium **reacts** with water
The results **are showing** that . . .	The results **show** that . . .
Results **showed** that . . .	Results **show** that . . .
Our group **has been proposing** that . . .	We **propose** that . . .
Some researchers **are arguing** that . . .	Some researchers **argue** that . . .

Past Progressive Tense
Check your spreadsheets and photocopied articles in case you can find an example of this being used well in a recent science article written by a native English speaker. They are rare and usually unnecessary.

THE VOICE OF SCIENCE

Congratulations, you have polished the language of your manuscript. Your paper is a clarion call to scientists like yourself: You have modified sentences, evaluated the use of transitions, eliminated excess language, improved vocabulary, and checked the consistency of tenses. Your readers can now rely on the accuracy of your words because you have made your message clear to all the innocent scientists of the world who were not in the lab with you.

- You have remembered that writers forget their audiences at their peril.
- Your manuscript now speaks in the voice of science.

> *Good science is not written. It is rewritten.*
> *– R. West, 1928–*

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The Art of Dancing with Change

> *"English is destined to be in the next and succeeding centuries more generally the language of the world than Latin was in the last or French is in the present age. The reason of this is obvious, because the increasing population in America, and their universal connection and correspondence with all nations will, aided by the influence of England in the world, whether great or small, force their language into general use."*
>
> *– John Adams, American colonies, 1780*

Most native speakers of English consider they speak and write 'standard English', or 'the Queen's English', or at least 'good English'. However, even Welsh linguist, David Crystal, the world's most respected living authority on the English language, says 'standard English', the 'Queen's English', and 'good English' do not exist: Not in dictionaries, not in books, not in people's mouths. Instead we all speak and write with regional differences. Each of these different dialogues are labeled by those who are educated and live in English-speaking countries as 'standard English', or 'the Queen's

English', and, above all, 'good English'. The various species of English-speaking fish have always swum in such murky waters that it has never been possible to catch one and declare, 'This is a proper fish.'

At present North American English seems to prevail over British English in international communication. Probably this has occurred due to economic and technological advantages, but it may be simply due to numbers. The population of the United States is four to five times the population of the United Kingdom, so on that basis alone we could expect more language innovation from the American side. In the near future, more people will be communicating internationally in English than the population of North America and the United Kingdom combined. If number of users affects language change, we may be about to experience extremely rapid change as English-language fish from many other cultures swim in the river.

TRENDS IN INTERNATIONAL ENGLISH

Ever since the advent of the World Wide Web, societies have reeled under the impact of needing to communicate rapidly and effectively with other countries. In the world-wide effort to improve communication, we have only begun to establish what may become known as international English. A Cherokee chief in the 1800s called English the language of deception. To whatever degree this was, or is, true of English, it is not a valuable characteristic in science.

Scientists around the world desire to use language in order to give and receive information without ambiguous nuances. Scientists will welcome changes that result in a more international,

clearer English, because in no other field is a direct and simple international language so needed as it is in science.

Disappearing Differences between British English and North American English

In the process of becoming a world language, differences between British and North American English are fast disappearing. Some differences in lexicon exist: 'lorry'/'truck', 'torch'/'flashlight', 'boot'/'trunk', 'pudding'/'dessert', 'pram'/'baby buggy', 'nappy'/'diaper', 'sweet'/'candy', 'biscuit'/'cookie', and 'wallet'/'billfold', but none of these are words that appear commonly in science.

Few, if any, differences in grammar are found any more. Spelling differences are still noticeable, but even these are fast fading under the influence of the Internet.

> *In days of old, when*
> *Knights were bold,*
> *And science not*
> *Invented. The Earth*
> *Was flat, And that*
> *Was that, with no*
> *One discontented.*
>
> *– anonymous, 1800s*

Spelling

North American spelling has become more common than British among the majority of the world's English-language

users. A glance at the journal you plan to submit an article to will show you which spelling the journal prefers. Which you choose is unimportant as long as you are consistent. A journal will not reject your manuscript because you use British not North American spelling, or vice versa.

Table 4.1 shows some remaining differences in spelling although these are of little concern anymore as word-processing programs easily locate and make the changes for us.

Style

The style of British English is more formal than North American English. The differences in style are of little concern to the readers of this book as they are rarely apparent in a well-written science paper. However, differences in style may affect the wording you choose for narrative writing in cover letters, introductory letters, and correspondence between colleagues. [See Chapter 5 for examples of letters.]

American English makes less use of polite, ambiguous verb forms, such as: 'could', 'would', 'should', 'might', 'can', 'may'. These auxiliary verbs can be extremely slippery: Sometimes some are interchangeable; other times they are not. At any rate, they are apt to convey meanings different from what the writer intends; their meanings are subtle and dependent on context. One use of such words has been to add grace to personal correspondence or cover letters, but this kind of use requires a high sensitivity to the English language as well as to what is appropriate. When in doubt, resolve your debate by replacing the verbs accompanied by auxiliaries with their simpler verb forms.

Table 4.1 Some Spelling Differences between British and North American English

British	North American
• advertize, advertizement	• advertise, advertisement
• aluminium	• aluminum
• analogue, catalogue, dialogue	• analog, catalog, dialog
• cancelled, cancelling	• canceled, canceling
• centre	• center
• cheque	• check
• colour, honour, labour, valour, humour	• color, honor, labor, valor, humor
• favour, favourable	• favor, favorable
• focussed, focussing	• focused, focusing
• gaol	• jail
• enquiry	• inquiry
• inflexion	• inflection
• jewellery	• jewelry
• licence	• license
• litre	• liter
• practise	• practice
• manoeuvre	• maneuver
• neighbour	• neighbor
• organise	• organize
• sceptical	• skeptical
• specialise	• specialize
• sulphur	• sulfur
• theatre	• theater
• travelled, travelling	• traveled, traveling
• tyre	• tire
• vigour	• vigor

Personal correspondence in American English tends to be more informal than British English. For example, especially in American English, the words 'whom' and 'shall' are often replaced with 'who' and 'will', the difference between 'among' and 'between' is often ignored, and the subjunctive can be found without its traditional reversal of verb–subject agreement. How far this trend will go is unknown but it does serve to simplify grammar.

The current style of North American English in personal letters often seems breezy or even impolite. Create spreadsheets from the letters you receive, which can guide you in the style you choose to use. Notice that North American English tends to contain new idioms. These sometimes seem appealing, but they go out-of-date or change meaning so rapidly that they are not helpful: Avoid them. Writers are safest who resist the temptation to write as informally as some Americans do.

Changing Places of Parts of Speech

Traditionally we all like a grammar that can be learned, can be depended upon. This is not how English is. One of its more frustrating characteristics must be the freedom it seems to have to take one part of speech and use it as another. However, this is also one of the glories of English. It has more flexibility than any other language because its syntax easily adapts to new content and allows it to take in new ideas.

Nouns Becoming Verbs/Nouns Becoming Adjectives
Nouns today sometimes change from nouns, to verbs, to adjectives without even changing their form. For example

we can get email; email someone; and get email letters. We can work in an office; office with someone; use office supplies. No other language has this – what some consider scandalous – flexibility. When you see an example of these trends in a science article, look it up in a dictionary published 2000 CE or later. If it is there, add it to your spreadsheets.

Adjectives Being Used as Adverbs

Americans have a tendency to use adjective forms in place of adverbs. The use of 'good' in situations where 'well' has been traditional, 'different' for 'differently', or 'slow' instead of 'slowly'. How common or accepted this will be in the future is unknown. So far they are not considered to be correct usage.

Moving Toward Faster and More Direct Communication

International English seems to be moving toward faster and more direct communication. Many of us may find new trends an annoying use of language even though they get meaning across quickly. An important part of this trend in science journals is the use of active voice instead of passive voice along with the use of simple present tense, both in the name of getting messages across directly and quickly. See, for example, if you agree that the active-voice, present tense sentences in the right column of Table 3.2 are easier and faster to comprehend than the passive-voice, progressive tense sentences in the left column.

Punctuation

Contemporary English uses less punctuation than was traditionally used. How much internal punctuation is required in sentences is changing, so, when in doubt, check your spreadsheets and photocopied articles. The direction of change, however, is toward simplicity.

Capital Letters

English has been dropping capital letters for over a hundred years. Early in the 1900s abstract qualities such as 'love', 'nature', 'strength', 'loyalty', and 'beauty' were no longer honored by being capitalized. Soon after the seasons, 'winter', 'spring', 'summer', 'fall', lost their capital letters. Then words such as 'university', 'professor', 'doctor', 'chemistry' lost their capitals, except when used in titles, 'Kyoto University', 'Professor Dreiss', 'Dr. Lee', 'Chemistry Department'.

We can only guess which capitals will next become considered unnecessary and disappear. One can only be amazed at the singular egotism with which English capitalizes the pronoun 'I' and yet does not give this respect to any other of the personal pronouns – surely embarrassment will eventually put an end to referring to oneself as "I".

Rarely is a new discovery or technological event so astonishing that it gets gifted with a capital as did the Internet: There was a phenomenon worthy of an "I"! Although the Internet retains its capital in early 2000 CE dictionaries, if trends in capitalization continue, then soon we should see 'internet' without the capital. Similarly, the preferred punctuation of 'World Wide Web' may soon be 'world wide web'.

Hyphens

The modern trend is to eliminate hyphens except when using two words to form an adjective: 'English-speaking person', 'panic-stricken person'. Old friends such as 'co-operation'/'re-unification' have become 'cooperation'/'reunification', and even words originally considered too odd looking or hard to pronounce, such as 'reestablish', have become correct form. The modern trend is to combine old forms into single words.

Commas

The trend has been to use fewer and fewer commas. Today a comma is required only when a clause or phrase is not in its expected place in a sentence and to separate items in a series. Most writers of science have now agreed to place a comma before 'and' in a series.

Acronyms and Abbreviations

The English language, especially in science, has moved rapidly to the acceptance of acronyms and abbreviations. This seems to be part of the move toward quicker recognition and faster comprehension. Note that the brain comprehends at a far greater speed than eyes can move over print.

Until relatively recently acronyms included the use of periods after each letter. Use of a period (full stops/dot) after each letter first became optional and now has disappeared. Instead acronyms are now correctly spelled in capital letters, without further punctuation: RSVP, UK, CIM, RAM, ROM, USA, ASAP, TV.

Abbreviations today, especially in science, are an odd mixture of correct styles. Abbreviations for single words are spelled

with an ending period, for example: Dr. Abdul, Prof. Leites, no. (number), fig. (figure). Yet units of measure have no capitals and the ending period vanishes, as in: kg (kilogram), cm (centimeter), km (kilometer).

Then some units of measure are acronyms and in these the ending periods as well as the capital letters disappear, as in: ppm (parts per million), rpm (revolutions per minute), kph (kilometers per hour), bps (bits per second). Interestingly enough symbols named for people still usually take capitals: N (Newton), K (Kelvin), T (Torr, from Torricelli).

For a complete list of acceptable short forms for terms used in the sciences refer to *Elsevier's Dictionary of Acronyms, Initialisms, Abbreviations, and Symbols* (2003).

Emoticons

At the extreme and unhelpful end of the tendency to shorter ways to communicate in English are 'emoticons'. This is an intriguingly new and still evolving linguistic trend which tends to delight, annoy, or puzzle us in the emails we receive.

Possibly you have seen graphics showing emoticons as they are symbols which can be found displayed in dictionaries published since 2000 CE. 'Emoticon', a word formed by blend of the words 'emotion' and 'icon' is an arrangement of keyboard characters, which are intended to be viewed sideways as symbolic pictures conveying emotions, for example, 'faces' that look happy, sad, shocked, bored, or scared. None of these are in common use and at this time do not belong in professional correspondence.

The list of such oddities has been further expanded to include acronyms for a large number of phases: 'CUS' for 'see you soon' or 'IMHO' for 'in my humble opinion'. These are of even less value and less understood than emoticons and highly unlikely to be helpful or amusing outside an extremely small circle of friends. Please do not use them in international communication.

Keep sensitive to changes that occur in the Internet correspondence you receive, evaluate who the author is, and choose the models you follow with care. Some styles are at present overly casual and you should be hesitant about imitating them. However, stay alert because what is acceptable is changing all the time.

> *Double, double toil and trouble; Fire burn and cauldron bubble.*
>
> *– Shakespeare*
> *MacBeth*
> *Act IV, scene i*

Questions

Avoid asking questions of the reader in your paper. This technique has gone out of fashion and is seldom seen. Instead you are expected to make statements that give readers information. It is considered a bit autocratic and controlling to ask questions of people who are not there to answer.

Check your spreadsheets and photocopied articles. Perhaps you will be able to find an article in which a question is posed

to the reader. However, these are rare and the most you will ever find in an international journal is one per article. So, discipline yourself to make careful statements instead and save your questions for times when you address a live audience that has, at least the possibility, of answering.

The Mysterious Word 'The'

Perhaps international change will be able to destroy the grounds for the myth that correct use of the word 'the' can only be understood by native speakers of English. However, today this word is used by native speakers of English with less consistency and more mystery than most non-native speakers want to tolerate. The articles 'a' and 'an' are easy to use correctly compared to the mysterious and rather noble-sounding 'the'.

A frustrating aspect of understanding the use of 'the' is that children born to English-speaking parents have no difficulty with it by the time they enter school. Consequently, instruction is not given to them, nor is there sufficiently helpful instruction in grammar books. So we all leave school believing that the frequent and often beautiful use of 'the' in stories, newspapers, and poetry is the way to use 'the'. And then some of us become scientists and want to write in the style of science journals.

The style of writing in scientific journals, especially in research reports, uses fewer 'the's than any other forms of writing. Many 'the's in English are optional, and science, luckily for you, takes the opportunity to omit as many optional ones as possible. In science today, this is somewhat

of a problem for native as well as non-native English writers, but native speakers have 'an ear' for whether or not it can be left out and whether or not it should be left in. Probably you will need years to develop 'an ear', and the good advice of 'When in doubt, leave it out' may get you into trouble. Your most helpful source will be found in the spreadsheet information you gather from recent journal articles.

USING A DATABASE PUBLISHED AFTER 2000 CE

The final step in the art of dancing with language change is to use the music of a recent dictionary to accompany you. The early part of this new century has seen English adding words and altering word meanings at an unprecedented rate. Further, linguists predict this rate of change will increase as English continues to expand into a global language in an international world.

Writers of science must realize the value of checking on the age of their language database, whether in a book or on a computer. Many of the spell-check programs in use today fail to recognize changes in language which have been in place for years. Dictionaries on CD-ROM or on our desks are misleading if they are more than a few years old. Certainly those published before 2000 CE are no longer sufficiently helpful.

Whichever British or American database you choose, you will find each has a certain approach and priorities. For example, among the many American dictionaries, the *Random House Webster's College Dictionary* along with other Random House dictionaries are some of the few that, in addition to adding new words to each addition, attempt to put the most

common meaning first. This is in contrast to dictionaries which prioritize meanings in less helpful ways, such as historical entrance into the language. Random House also lists new and old idioms by year of entry into the language, and so far has kept abreast of additions from the Internet and computers.

A relatively new dictionary, *Microsoft Encarta College Dictionary: The First Dictionary for the Internet Age* (2001), has a helpful unbiased emphasis on the language of current politics as well as on recent technology. However, it does this at the cost of omitting some of the historical and much of the etymological information in other dictionaries. An unabridged form of this dictionary was published in 2005.

Decide what is most important to you in a dictionary or database and choose yours accordingly. Finding out about the currency and usefulness of your language data base is essential. Scientists using old dictionaries continue to operate in danger zones.

A RECENT EXAMPLE OF LANGUAGE CHANGE

The evolution of the term used to refer to what we now call 'email' provides an interesting example of ongoing language change. The word has migrated through language changes demonstrating, in turn, the contemporary tendency to:

- adopt abbreviations,
- drop capital letters,

- omit hyphens,
- use nouns as verbs.

Even though the term for electronic mail was first used publicly 1975–1980, the 1984 edition of the *Random House dictionary* lists only 'electronic data processing' and 'electronic music' with no entry for 'electronic mail'. Then, as the practice of sending mail by computer became more common, the entry added a capital letter to create 'Electronic mail', as if to acknowledge its importance.

Then, following post-modern trends in English to drop capitals and accept abbreviations, the 1992 *Random House Dictionary* drops the capital 'E' and lists 'electronic mail', and includes as a separate entry, 'E-mail', interestingly enough giving the abbreviation a capital 'E'. However by 1997 the dictionary drops the 'E' and the entry becomes 'e-mail'. Finally following current trends to drop hyphens and form a single word, by 2001 even the conservative Oxford University Press' *Oxford Dictionary of Current English* lists 'email' as the correct spelling. Further dictionaries now list the word as a verb as well as a noun. Presumably this completes the evolution of the accepted term for electronic mail, giving us a fine example of how rapidly the English language is changing.

FUTURE OF THE ART OF DANCING WITH CHANGE

English by means of the World Wide Web is spreading into more and more corners of the world, expanding and revising itself through other languages, and gathering new

riches. Although English appears to be the strongest horse in today's race to ride across the plains of the planet, all riders should sit firmly in their saddles and keep close eyes on the horizon. One German professor said recently that in science he now thinks better in English than in German. If this should become true of others around the world, we should all be concerned about what science may be losing. Surely science needs the insights that come through thinking in other languages, for these may be the insights that change and expand the nature of science.

> *All people in this world are one of three types: those who are immovable, those who may be moved, and those who move.*
>
> *– Arab proverb*

– 5 –

The Art of Writing Abstracts, Proposals, and Letters

A vital piece in having an article accepted for publication in an international journal, of being accepted as a speaker at an international conference, or of writing a successful grant is your ability to write good abstracts, clear proposals, and appropriate letters. None of these are difficult but they all require special skills.

> *Brevity is the soul of wit.*
>
> *– Shakespeare*
> *Hamlet*
> *Act II, scene ii*

ABSTRACTS

Every journal and every conference will expect your research paper or proposal to be accompanied by an abstract. The abstract will be read first, and its quick clarity will strongly

influence whether or not your work is further considered for publication or for presentation. The abstract is designed to tell a scientific story that is easily understood and can, in turn, be quickly conveyed to others.

An abstract is an extract of the essence of your work. Abstracts are not summaries; they are more concise and clearer than summaries. Summaries are often organized chronologically; abstracts are not. Abstracts are built around importance. They give what was discovered, how it was done, how it fits with other research, and what it suggests for future research. They are an exercise in precise, accurate language.

The difficulty in writing an abstract is that the abstract must be short – indeed very short. Most journals' instructions tell authors to send in abstracts of as few as 100 words or less. Conference abstracts sometimes require as few as 50 words. Writing a good abstract requires extreme discipline even from those who normally are superb writers of English.

Writing an abstract requires unusual cognitive and linguistic discipline. Excess words must be carefully eliminated until the ones that remain ring true to fellow scientists' brains and to English-speaking ears. The clarity of the words will determine: First, whether others will read your work, and, second and perhaps even more important, if readers will accurately report its information to others.

One well-published chemist at the University of Wisconsin proudly states that he can write a shorter abstract than anyone else. If so, he is appreciated by all journal editors, readers,

and organizers of conferences. The five maxims for writing abstracts are:

- Stay within or under the required number of words.
- Edit carefully.
- Have a colleague who knows your work well edit.
- Edit again.
- Check your word choices and structures against other recent abstracts in the journal to which you plan to send your paper, or against previous proceedings of the conference to which you are applying.

Your abstract will be read by far more people than will ever read your paper. Consequently take the time and effort to polish it into a small perfect shining crystal of succinct information.

PROPOSALS

Proposals for presenting at conferences are relatively easy to write. However writing proposals for grants is considerably more difficult. Both kinds are submitted electronically.

Proposals to Conferences

Writing proposals for presenting at conferences is similar to writing abstracts. Brevity is important but conferences seldom require the proposal to be as short as abstracts for journals. Each conference will have its proposal requirements and deadlines posted on its website. These must be followed carefully. Usually the conference prefers a one-page proposal that can appear in their program. If you are accepted, the

conference may then notify you the date for submitting an expanded paper for publication in their proceedings. Submission of a paper for the proceedings is voluntary. The proceedings are usually published so that this gives you a publication. However, give careful consideration before having your work published this way because a science journal will not consider publishing work that has been published elsewhere.

Proposals for Grants

Writing a grant proposal is quite different from writing a proposal to present at a conference. Grant proposals are lengthy matters, requiring information about your research, the background for it, its purpose, and its value to the grant-giving organization. Each institution, each organization, and each federal government offering grants have different requirements for the writing of the grants which they will accept.

Most universities and industrial research laboratories have people skilled in grant writing who can help you. Also whoever is offering the grant will have detailed instructions for applying. Instructions will vary widely among grants. Many grant-offering organizations are willing to send you copies of old successful applications.

First-time applications for a grant are often unsuccessful, but do not be discouraged. If yours is rejected, detailed information about why it has been rejected will accompany the rejection. Next you should carefully rewrite the grant addressing the reasons it was rejected, and resubmit. Successful scientists who have received numerous grants tell us that they have often rewritten and resubmitted a grant

three times before it was finally accepted. Besides improving the grant each time, they learned more about writing successful grants in the best way possible: by experience.

LETTERS

This is the long and short of it.
– Shakespeare
Merry Wives of Windsor
Act II, scene ii

Cover Letters

Submissions to journals today are done electronically, and including a brief electronic cover letter is appropriate. Such letters are easy to write and have no need to be original, witty, or eloquent. [Figure 5.1 shows an example of a cover letter. Table 5.1 gives suggestions for closing words.]

Basically a cover letter simply tells the editors you have attached an article for their consideration and may include a brief list of other scientists in your field, who in your opinion would be appropriate for reviewing your work. The reason you supply names of 3–4 others in your field is to alert the editors about people who have expertise in the subject of your paper. The editors may or may not take your advice, but the help you give them may prevent them from sending your paper to inappropriate reviewers. Normally you do not include names of people at your university.

Editors
Journal of Important Science
1000 Hope Street
New York, NY, USA

February 20, 2006

Dear Editors,

Please consider the attached manuscript for publication in *The Journal of Important Science.*

Suitable reviewers for this manuscript, who are acquainted with this field of science, include:

- Prof. J. C. Maxwell, Chem. Dept., Institution, City, USA, email: mx@yahoo.edu.
- Prof. M. Genji, Materials Sci. Dept., Institution, City, Japan, email: gnj@matsci.jp.
- Dr. J. S. Bach, Research Dept., Company, City, Germany, email: jsbach@matris.de.

Sincerely,

– Hong Mee *(Type your signature in italics, without a title)*

Dr. H. Mee, Associate Professor
University
City
Country
tel: 609-731-4855, ext. 3
email: nmee@university.edu

(Type your name, title, address, telephone, and email)

Figure 5.1 Example of a Cover Letter for Electronic Submission of an Article to a Science Journal

> *Men of few words are the best men.*
> *– Shakespeare*
> *King Henry V*
> *Act III, scene i*

Table 5.1 Suggestions for Closing Words for Use in Professional Letters.

Professional	Personal	Slightly Dated	Obsolete
• Sincerely, • Sincerely yours, • Yours, • Yours sincerely,	• Warm regards, • All the best, • Best wishes, • Cheers, • Best regards,	• Yours truly, • Respectfully yours,	• Your humble servant, • With deep respect, • Humbly yours,

> *The better part of valour is discretion.*
> *– Shakespeare*
> *King Henry IV, Part I*
> *Act V, scene iv*

Introductory and Application Letters

Thabo Mbeki, speaking in South Africa, called the Internet more a social creation than a technological one (Crystal, 2001). Today most letters worldwide are sent and received

over the Internet: letters to people we know and letters to those we are contacting for the first time. Corresponding through the Internet has changed the style of normal email correspondence enormously. We have become, some would say, frighteningly informal in the way many of us write to others. For many of us, this upsets a number of the letter-writing traditions we were taught.

Deciding what style to use when sending emails is your choice. However, choose your models carefully and consider what type of personality you desire to convey. Some kinds of language may be intended to be friendly but may actually appear to be so informal as to be impolite. For example, beginning an email message 'Hi,' or 'Hi Petey,' or 'Hi Dr. Young' when the recipient has not previously met nor communicated with the writer may shock the receiver.

Other greetings seem to be overly formal, 'My Very Dear Dr. Young' or 'Honored Professor'. There is nothing wrong with such greetings but they seem old-fashioned. At the other extreme, occasional emails arrive with no salutation beyond the name at the top and the subject line: This form of email seems rude when used to address someone who is not an old friend or who has not been involved in a continuing sequence of emails with you. The Internet permits us to respond more quickly and more efficiently than was even dreamed of in the days of postal mail; now the degree of what has been traditionally considered good manners is up to you.

Treat any email much as you would a letter by being sure to sign off with a word or phrase such as 'Sincerely', and on the line below, your name, without title. Probably at the bottom of each letter, your email automatically adds your

Date: Tue, 23 Feb 2006
From: K.J. Ping <kjing@hspt.ac.jo>
Subject: Application for a Postdoctoral Position
To: west@chem.wisc.edu

Dear Professor West,

I am a graduate student at Advanced Technical University in Berlin, Germany. I received my Ph.D., in October, 2005 and expect to complete studies for my Ph.D. degree by April or May 2007. My research has involved the study of the synthesis of optically active SiO-containing polymers and siloxane gels.

I am highly interested in the research in polymer being done in your laboratory, and would like to work in your group, if such a position is open. I would appreciate it very much if you would let me know about any such possibility.

I have attached a copy of my personal resume. My supervisor, Professor Dubono, will be happy to write a letter of recommendation for me, and other references are listed in my resume.

Yours sincerely,

– K. J. Ping

K.J. Ping
Department of Chemistry
Advanced Technical University
Berlin, Germany
kjing@hspt.ac.jo

Figure 5.2 Example of an Introductory Letter, Sent by Email

full name with title, your institution, telephone, and email. If you do not have this feature on your email, add the information at the left, a line or two below your typed signature. [Table 5.1]

The most effective letters of introduction or application are simple and direct. They are to the point, brief, and state only factual, relevant information. You attach your resume and perhaps one other relevant brief document, such as an abstract. Letters of recommendation are sent later by the people who are recommending you. Because letters of introduction or application are so brief, it is absolutely essential that you make no mistakes, even of a minor nature, in your English. Edit your letter, and have at least one other person edit it, before you send it. [Figure 5.2 gives an example of a letter of introduction and application.]

Keep a file of letters you send and letters you receive. These will serve you as a future resource for appropriate letter writing. The danger of email correspondence is that you may write so quickly that the English in it falls short of the level of excellence you want. The best advice is to compose your letters in a word-processing program, and then, after you are certain of their perfection, copy and paste them into email. The success this brings you will make the extra effort you give more than worthwhile.

> *A very good piece of work, I assure you, and a merry.*
> *– Shakespeare*
> *A Midsummer Night's Dream*
> *Act I, scene ii*

PART II

Presenting at International Conferences

Presenting good research at an international conference is everyone's desire, and many people's fear. However, if you are someone who has been ill-at-ease about presenting, you need be no longer, because the art of being a good presenter is something you can learn. The world of science needs to hear about the exciting and interesting work you do. Telling others about your research gives a gift to other scientists. Soon you will become involved in sharing internationally with many people. When you do this, science becomes friendlier, bigger, and better.

You have already written a successful abstract [See Chapter 5 on writing abstracts] and been accepted as a speaker. Congratulations. Now, at the conference you will be expected to speak, not read, your paper and to, talk about, not read, your slides.

Being successful as a presenter means being fully prepared. To become fully prepared you must not waste your energy by worrying. Some people spend a great deal of otherwise valuable time by worrying. Worrying is not helpful. Preparing

is helpful. As a wise, fine scientist, you are going to be a successful presenter because you are going to be prepared.

Because Part I addresses writing and Part II addresses speaking, you will find significant differences in advice. For example, you learned in writing to: edit out all extraneous words; use transitions only when required; be careful in your use of polite but ambiguous verbs, such as could, would; and avoid the use of questions. Now you will find that in presenting, you may want deliberately to use some extraneous words in the forms of politeness, and language softeners in order to smooth the transition from slide to slide. You may find that asking questions with your voice or on a slide can now sometimes become an effective technique.

Fortunately for you, successful presenting is a much easier art to master than is the art of writing a paper for publication. These two arts walk hand in hand and help each other along the path to communicating science successfully.

- Chapter 6 helps you understand the role of slides.
- Chapter 7 gives techniques for making music with your voice.
- Chapter 8 deals with showing body bravery and practicing.
- Chapter 9 contains tongue-in-cheek advice on the art of napping.

– 6 –

The Art of Preparing Slides

As soon as you know you are going to speak, begin by preparing your slides. Choose titles, key words, graphics, citations, and think about color and design. Everything will become easier once you have prepared the slides. Unknown to you, all the time you are preparing slides, your mighty subconscious mind is preparing the ground for the words with which you will explain your slides. As you create your slides you are like a farmer planting seeds from which a garden will grow.

Today most scientists design and prepare their slides by using a software program, such as Microsoft's PowerPoint, to prepare either 1) a set of individual transparencies, which will be placed by hand on an overhead projector, or 2) a set of transparencies on a CD or a flash stick, which will be projected through a computer. Which way you choose to present is unimportant. Choose whichever way feels most comfortable to you. Each style has its advantages, and each is equally good. A wise presenter, however, carries a set of individual transparencies as a protection against electrical failure or unexpected computer incompatibility.

A Picture Is Worth a Thousand Words.
– Chinese proverb

BEING AN ARTIST

Computers permit us to make beautiful slides: They let us use color, insert photographs, and even add motion. However, please be gentle with your audience. Such additions such as color, photographs, or motion are good only if they help your slides be:

- clear
- legible
- easy-to-understand.

Unfortunately, software programs for creating slides have not, as we hoped, solved the problem of poor slides. However, such programs have made it much easier to create an excellent and memorable set of slides.

You are a scientist, and, when you make slides about your work, you also become an artist. Your aim is to create slides which add to, not distract from, your message. To make artistic slides you need to give as much thought to the size and placement of areas of space as you do to your use of print and color. In the end you want your slides to show that you care enough about your work to produce slides that are clear and pleasing to the eye but do not look like gaudy commercial advertisements. The audience appreciates a good set of slides but they are interested in your research not in how capable you are of using bizarre colors or images

revolving or shooting in or out of the screen. Challenge yourself to make attractive but scientific looking slides.

> *We will draw the curtain and show you the picture.*
> *– Shakespeare*
> *The Tempest*
> *Act I, scene v*

Use of Color

International conferences yield both good and poor examples of the use of color. Next time you attend a conference note how color is used on the slides that are easiest for your eyes to understand. Make notes of ideas for your next set of slides, especially techniques that invite your slides to look like a set rather than a random assortment of slides.

Each computer program has background colors for slides. Pale colors, such as pale yellow, make a more interesting background than a plain screen, but choose a background color that does not interfere with the clarity of the information on the slide. Notice that a bright-colored background makes seeing the information on the slide difficult. Backgrounds come in the form of 1) templates that can be used on all or selected slides, and 2) 'fill' colors by which you can vary the background or effectively leave the screen white in areas behind print. Further any of the colors can be toned brighter or paler.

Many of the programs for specific sciences, such as ChemDraw, have a limited and rather glaring choice of color, but the main program has a wide and tasteful assortment. So

when using programs for symbols specific to your science, switch back into the main program, in order to apply color that pleases the eye and doesn't clash. Highlighting words in primary colors of bright red and bright blue, for example, is less pleasing than using the same colors but in a red with some orange or pink in it, and a blue with some green or red in it. The palette of colors available is excellent; take some time to find good colors.

Too many colors, say a total of 5 and up, on one slide is usually not only less pleasant but less effective than 2–4. However at a recent international conference one highly effective slide used 9–10 colors between the fill colors and the print colors. So, do it your way, but be kind to the eyes of your audience. Purple and red, for example, are usually not pleasing on the same slide, especially when the shade of red is towards the orange.

Background fill color can help clarify information when it is necessary to have a list that fills the slide. A band of a single pale fill color behind one item on the list alternates with a band of the screen color behind the next item. This is effective when a great deal of information must be listed on one slide and only a total of two colors are used behind the print.

CHOOSING FONT STYLES AND SIZE OF PRINT

Fonts

On slides the simpler fonts, such as 'Arial', are easier to read on a screen than more traditional fonts with serifs, such as 'Times New Roman'. Generally using bold throughout is

easiest to read, especially if you have both a large screen and a large audience. At any rate avoid using a variety of serif and non-serif fonts on the same slide in order to avoid distracting the eyes of the audience in ways that hinder their reading and understanding of the slide. Lower-case letters are easier to read than all capitals.

Print Size

Keep the size of print for words and numbers as large as possible. In most programs anything smaller than point-18 cannot be read on the screen by all the audience. This may mean you need to make a larger number of slides and put less information on each slide. You want the people at the back of the room to be able to read all the information, including the citations. To do this you must 1) limit the number of words on each slide, and 2) discipline yourself to put as little information on each slide as possible, using your voice to fill in the information.

An audience at a conference becomes annoyed with a speaker when there is so much information on a slide that they cannot follow the speaker's logic. Unfortunately this becomes particularly true when the audience also has trouble understanding the speaker's English.

ADDING EMPHASIS

Add emphasis to your slide through the use of color and by putting the most important information in a larger print size, down to the least important in smaller size.

Take care that even your smallest print can be read by the audience, making use of abbreviations where necessary. Then make your choices consistent throughout the set of slides.

Italics are sometimes used effectively to add emphasis. However underlining is not effective. A form of emphasis that is seldom considered to be in good taste is the use of exclamation points. A total of one exclamation point might occur on an entire set of slides without appearing to add an unprofessional touch to the presentation.

You will decrease your need for emphasis if you avoid putting whole sentences or lengthy phrases on your slides and instead using only key words or brief phrases. This permits you to give effective emphasis by what words you choose, your tone of voice, where you pause, and the words you stress. The audience will appreciate your style and understand your slides better.

NUMBERING ITEMS

Be cautious about numbering items on your slides that do not require numbers. If you are only indicating a list of points or details avoid labeling with numerals: 1, 2, 3 . . .; I, II, III . . .; i, ii, iii . . . or implied numerals: a, b, c . . . Numbering is should be used only when you are emphasizing chronology or priority. Otherwise numbering is embarrassingly meaningless and should be replaced with bullets, dashes, or some other appropriate symbol.

DETERMINING THE NUMBER OF SLIDES

Here are the steps for determining how many slides you need:

- First, assemble the slides you have.
- Second, arrange them into a good sequence.
- Third, practice explaining them.
- Fourth, time yourself as you explain each: Ideally each slide is explained in a slow careful voice in a minute (or much less).
- Fifth, add, subtract, or combine slides so that each can be explained in a minute or less AND the total come within your allotted time.

CHOOSING TITLES AND WORDS

Titles are important. A title states the topic of the slide as simply and as briefly as possible. Titles should look like titles: Perhaps yours will be enclosed in colored boxes, written in larger print or in all caps. At any rate, in some way your titles must signal clearly that they are titles and that the information they contain is vital to understanding the slide. Titles are clearer and more emphatic if they are written as topics, not as complete sentences.

Rarely if ever do good slides contain complete sentences anywhere, even in conclusions. Complete sentences on a slide put a presenter in an embarrassing position, because the speaker is then forced to read aloud to an audience. Reading sentences aloud to a literate audience is insulting

to them. A literate audience has already seen the words and read them for themselves before you have finished saying them. Your voice then sounds repetitious and uninteresting, and the attention of the audience wanders at the very time you most wanted them to pay attention. So what is the solution? The solution is to use key words and phrases on the slides and let your voice complete the information, adding interest and details. Otherwise, especially in the conclusion, you will end on a slightly boring note. No one wants to complete a presentation on a boring note.

COMPLETING YOUR SET OF SLIDES

The Credit Slide

An important slide is the one in which you give credit to those who have worked with you or financed your research. If there is time, read these names aloud to give honor. Usually the slide contains only their names and your voice adds titles or other information, such as the institution and country. Often this slide is last, but it can also be first. Placement is unimportant. What is important is that the credit slide is there somewhere so that others always receive appropriate credit.

The Final Result

You want to make every effort to complete your slides so that the final result looks like a set. Perhaps you are using several slides you have used in the past. Fine, but now redo them so that they match the others in this presentation.

Fortunately the ability to scan in material and the help of computer software make it easy to redo old slides so that they become a professional-looking part of a set. So, take the time to make your slides have some common elements that help them look like a set. Ideally throughout the set you have already used the same style of font, varieties of color, and emphasis techniques on each slide. Perhaps you have chosen to use the same background fill of pale color throughout, or you may have invented some other distinctive but still tasteful touch to make it clear that your slides are a set.

The best result will be a set of slides that serves information kaiseki style. 'Kaiseki' is a quietly impressive way of serving food at elegant banquets in Japan. Many, small, attractive, well-prepared dishes, are served sequentially and with grace. Think of your presentation as a banquet and your slides as the food.

Then serve your information by putting only a small, tasty dish on each slide. Ideally you will have many slides, each requiring less than a minute of explanation. This way the information on your slides will be clear, and the minds of the audience can feast happily on your well-prepared information.

Now, you have a complete and tasteful set of slides, and now all you have to do is to become master of your slides. You will show the audience you are the master, not the victim, of your slides by the music of your voice and by your body language.

> *Why, then the world's mine oyster.*
>
> *– Shakespeare*
> *Merry Wives of Windsor*
> *Act II, scene ii*

– 7 –

The Art of Using Your Voice

The tune of English may be different than the music of the language in which you usually speak. If so you may have to learn to sing a new melody – a melody in which stress is vitally important. English is a stress-timed language more than a syllable-timed language. So, although pronunciation is important, it will have less effect on whether or not your English is understood than using the correct stress will.

> *Friends, Romans, countrymen, lend me your ears;*
> *– Shakespeare*
> *Julius Caesar*
> *Act III, scene ii*

STRESS AND ACCENT

Linguists and dictionaries have not yet agreed upon exact pronunciations in either standard British English or standard American English, but they usually agree on placement of stress. So match your use of stress to that of some native speaker of English and you have relatively little to worry about.

If you have the stress right, you should not waste your time by worrying about whether or not you have some kind of accent. Everyone has an accent. Even a person born and raised within an English-speaking country has some form of regional accent.

Perhaps as English simplifies and becomes even more international, a universally accepted set of pronunciations will develop, but that hasn't happened yet. And don't hold your breath waiting for it.

PITCH

So whatever English accent you use, treat your voice like the magnificent musical instrument it is. First, learn how to pitch your voice so that you will not strain it when you speak to an audience. Control the pitch of your voice by projecting the sound, not from the upper throat or nasal passages but from the diaphragm and lower throat. This type of deep projection makes your voice more pleasant to listen to. It keeps the 'roundness' of the sound of your voice and maintains warmth. In contrast, when you pitch your voice high, you strain your voice box: Your throat easily tires, and your voice sounds 'thin'.

VOLUME

We speak to friends and family with less volume than is needed when speaking to an audience. Successful speakers must increase the volume as well as the depth of their normal speaking voice. In fact you need to increase the volume and depth of your voice even when using electronic amplification because otherwise your voice will not sound as full and warm as it can.

Chapter 7

Gender Differences

Male and female voice differences are as socially induced as they are physically caused. Of course, there is a difference between male and female vocal cords. However this would not be such a strong difference had we not been encouraged by our cultures to deliberately pitch our voices high for women and low for men.

Women who let their voices go high in their throats instead of deeper into their chests sound a bit like children. Maybe this is intentional; maybe not. However, childlike tones of stress and pitch may invite listeners to assume speakers are less professional than they are. All of us, male or female, can train ourselves to speak in deeper, fuller tones.

Both male and female voices are sometimes soft and difficult to hear. With friends or in a small group a soft voice may be considered polite. However in a larger group soft, quiet speech signals that the speaker is uncertain, and that perhaps the audience should question the factuality of what is being said. All of us can train ourselves to increase the volume of our voices.

> *I talk to you: Why did you wish me milder? Would you have me false to my nature? Rather say I play the man I am.*
>
> *– Shakespeare*
> *Coriolanus*
> *Act III, scene ii*

SPEED

Once you have practiced increasing the loudness of your voice, you will want to concentrate on speaking slower and with more animation than you normally speak. Get someone, preferably who speaks good English, to help you decide which words or phrases you choose to emphasize in order to make an interesting English-sounding melody.

Research by mathematicians and linguists tell us that human languages around the world are spoken at about the same speed. Individuals within each language speak at varied rates, and this variation is about the same in all languages. Yet, most people believe other languages are spoken more rapidly than theirs. An unfortunate consequence of this is that when you speak a language, such as English, in which you feel less comfortable than in your native tongue, you may speed up. You probably are doing this under the false assumption that English is spoken more rapidly than it actually is.

Success speaking at a conference requires speech that is slower and clearer than occurs in normal conversation. However, nervousness can also invite one to speak too rapidly. If this is true of you, you may have a double problem achieving a loud, slow speed, but with practice and careful timing you can do it. (See Chapter 7 for advice on practicing and timing.)

READING TO AN AUDIENCE

The most important thing to remember is that the audience and speaker together form a speech. Avoid reading sentences on slides to the audience. Your audience is highly

literate and beyond doubt they can read English faster and better than they can hear it. So try not to insult them by reading to them exactly what is already there for them to see. The solution of course is to use key words or phrases rather than sentences on your slides. This way you can glance at the slide and then put key words into full sentences as you explain the slide, adding meaning to what they read. This will invite the audience to feel honored and will prevent you from feeling foolish for saying what they can clearly read.

Don't Read Your Paper Aloud

The only good advice about reading a paper aloud to an audience is 'Don't'. It is boring and ineffective. Possibly at some time in your career you will find it necessary to read a paper to an audience because the person scheduled to present is absent. However never let this happen when you have time to prepare. If against your best wishes you are ever forced to read a paper, the solution is to know the material so thoroughly that you are able to look frequently at the audience, project your voice enthusiastically, and only occasionally glance down at the print.

Sadly enough even though they know better, occasional presenters still read instead of speak their papers. Perhaps they believe their English will sound better when they read, but this is never true. Listening to someone read a paper is always difficult for an audience. When someone reads science aloud the voice tends to become sing-song and monotonous, whereas the information becomes alive and interesting when an audience can see a speaker talk,

look, smile, and gesture. So do whatever you can to make your information new and exciting. Permit yourself to have a communication with the audience that goes beyond words.

Speakers' success suffers when they read papers aloud because they are forced to bend their heads to look at the paper. This not only prevents the audience from seeing their facial expression but it constricts their throats so that their voices are harder to understand. The final sadness is that when speakers read to an audience, they usually hide behind a podium or table. Standing behind a table or podium is always a disadvantage because it signals that the speaker wants distance from the audience.

However, if, for one reason or another, you cannot avoid reading a paper aloud, you can somewhat compensate by looking up at the audience as frequently as possible and keeping at least one of your hands free to establish non-verbal communication (see Chapter 8). You can consider preparing your paper by:

- Putting accent marks on syllables to be stressed.
- Marking places where your voice should pause.
- Underlining phrases to emphasize.
- And, above all, practicing aloud (see Chapter 8).

SOFT WORDS

Your slides are ready. Your voice is ready. Now what words will you choose? Your spreadsheets and the articles you photocopied will supply you with good choices of verbs, adjectives, and phrases, but they will not supply you with soft

words to smooth the audience's way between slides. They are not in the articles you photocopied for these are words used verbally. In final drafts of published research articles, they are edited out as extraneous language.

But now you need them. You need the very words and phrases you edit out when you write. You need them in your voice, not on your slides. You want some simple words to serve as 'softeners'/'smoothers' as you lead the audience from one slide to the next. Find these words by listening for them at conferences when you hear English speakers present. Figure 7.1 contains a list of some heard recently at an international conference.

Listen for soft transitions when you hear English speakers at conferences. Choose the ones you like and make a list to add to your spreadsheets.

You might also consider a transitional word or phrase from your language or another language. Anything is superior to 'um uh . . .', 'er ah . . .', 'ummm . . .'. For example,

. . . as you see . . .
. . . having said this . . .
. . . once again we . . .
. . . and, yes, the . . .
. . . well . . .
. . . for example . . .
. . . now to our surprise . . .
. . . actually . . .
. . . anyhow . . .
. . . all right, so . . .

Figure 7.1 Transition Words Used as Softeners

you might choose something with a meaning similar to the English words: 'OK . . .', 'and . . .', 'so . . .', 'yes . . .', 'furthermore . . .', or 'next . . .'. Such a word or phrase in your native language could – with profit and no loss of audience understanding – add an ethnic international touch which might delight an audience and add to the pleasure of hearing your presentation.

> *Be not afraid of greatness; some are born great, some achieve greatness . . .*
>
> *– Shakespeare*
> *Twelfth Night*
> *Act II, scene v*

– 8 –

The Art of Body Language and Presenting Smoothly

What an amazing amount of courage it takes for any of us to stand before an audience. Every speaker, no matter how famous, needs bravery to speak to an audience. Your bravery is increased because you are able to communicate in two languages: The language of speech and the language of the body.

> *Our doubts are traitors, and make us lose the good we oft might win, by fearing to attempt.*
>
> *– Shakespeare*
> *Measure for Measure*
> *Act I, scene iv*

Your stance, how you move, and your facial and hand gestures tell the audience about you. According to Arnold and Roach (1989), non-verbal messages often take precedence over verbal and communicate more. Psychologists tell us the words we use comprise at best only 30% of communication.

This is good news to those of us whose English is poor, to those of us who dislike speaking, and to those of us who have slides. Now, how to use your body to communicate the messages you want to give the audience? You need good eye contact as well as a stance and gestures that show your courage.

EYE CONTACT

Whether you are brave or not, you must appear brave. The easiest way to appear brave – the magic touch of a good presenter – is to look directly at the audience. This gives the impression of being confident about your material. In your personal life you look at people when you talk to them. The secret for success with an audience is to appear to be having a conversation with them.

Look at them. Look at those to the left, to the right, in the front, in the back. Watch them intently to show how much you want them to understand. They will listen more intently and understand much better when they realize how much you want them to understand.

Look steadily at them. First at those in one place and then at those in another, looking at each place for 5–10 seconds or longer. If it distracts you to look directly into faces, look at the level of their faces but between faces. No one in a large audience will be able to tell you are not looking directly into someone's eyes. (Don't try this at parties or during coffee breaks or you will be thought of as evasive or extremely absentminded.) Beware of looking at the floor, or at the ceiling as you speak: The audience knows no one is lying down

there, or hanging up there, and will wonder why you appear to be trying to make eye contact the table or the chandelier.

Above all, do not let yourself be taken hostage by 'PowerPoint' and the screen. Technology has permitted you to make beautiful slides; now trust it to remain in place behind you or beside you. Glancing only briefly at the screen to remind yourself what the audience is seeing or to use the laser occasionally to emphasize a point. Generally keep your eyes on the audience and earn their respect.

KEEPING AN 'OPEN BODY'

Keeping your body open to the audience means keeping the entire front of your body facing the audience as fully, and as much, as possible. An expert will avoid hiding behind a podium or table. Step out. Step close to the audience and make them your friends.

Covering the front of your body with your arm/s suggests you wish to hide the essence of who you are. Try to keep your arms and gestures open to the audience. Above all, avoid turning your back and speaking at the same time. English has an idiom about 'turning one's back on something', which means rejecting it. So make all gestures at the screen with the arm closest to the screen so that you do not cross your body with your arm or turn your back. Instead trust the screen, know your slides, and give your attention to the audience not the screen. A brief glance will be enough to remind you what each slide contains, and then you – like the expert you are – can look at the audience as you speak.

Moving some as you present is fine. For example, you look good when you walk a bit as you speak or gesture. However, you want to avoid rocking back and forth, which distracts the audience, and particularly avoid stepping backwards. Moving backwards signals you are unsure; you want to keep the audience from thinking you are unsure about what you are presenting.

Some presenters worry about what to do with their hands. The best thing to do with your hands is not to think about them. Think about science. Then use your hands to get your message across and to show your enthusiasm. The audience deserves to see that you enjoy what you do.

Work on developing some easy open-hand gestures with your other hand that will help you explain your work. What is natural for you to do with your hands when you have a friendly talk with friends or family? Observe yourself from within, and then use these gestures to help you when you want to communicate with an audience. Particularly effective gestures are any in which your palms are up, fingers spread, or the thumb and another finger touch each other.

Audiences appreciate speakers who show they have opened their minds by speaking with their hands and arms as well as with their slides and voices. You will look informed, confident, and experienced.

USING A LASER

One of your hands may be holding a laser, which can so drive an audience crazy that possibly scientists should not

be permitted to handle this terrible instrument. However, the laser has one great advantage: It gives one of your hands something to do. If you use it, use it correctly.

The Off Button

The most important part of a laser is the Off button. Even some world-famous scientists have shown they do not understand the use of the Off button. Instead they have used a dancing, jumping light as they talk. The light flashes up/down–left/right–zig/zag–circle/swirl: The audience can hardly hear or see the good science because their eyes try to follow the path of light as it sweeps irrationally around the screen. The speaker knows what the light is trying to emphasize, but the audience does not. Consequently, the audience's comprehension and concentration fade. Your job as a presenter is to learn to use the laser correctly, or not to use it at all.

When you use a laser, employ a single, steady spot of light to show the audience where to look. Use a 2–3 second spot of light, indicating the exact location of the information you are about to explain. Keep the light steady; your voice silent; then snap the laser off and talk. A moving streak of light confuses the audience about where they should look and when you talk at the same time you flash the laser, the light will flicker about and distract the audience from hearing your words. Watch at your next conference and notice how a light flying about the screen like a nervous butterfly makes reading diagrams extraordinarily difficult. Your audience consists of intelligent people who want to study and understand your slides. Let them.

Once you have learned to master the Off button you show the audience: 1) You are a skilled presenter, 2) You know your slides well, and 3) You respect your listeners.

Which Hand and How to Stand

Where you stand and in which hand you hold the laser is an important part of your body language. When you stand to the left of the screen, use the laser in your right hand; when you stand to the right of the screen, use the laser in your left hand. If you move as you talk so that you go to the other side of the screen, switch the hand holding the laser so that you do not either put your arm across your body or turn your back to the audience. Be brave. Face them all the time and do it without closing your body off with your arms.

Recently in Philadelphia, a presenter giving a plenary lecture at an international meeting displayed an unusual and effective technique. He steadied his laser hand by putting his other hand on the wrist of the hand holding the laser. This way he could hold the spot steady for several seconds. He did not turn his back nor look at the screen himself for more than a brief glance. He was well-prepared: He knew what was on his slides; he showed the audience he knew. He was an expert. You can be one too.

PRACTISING

Once you have become comfortable with your slides, your voice, and your body, you will have accomplished the basics. Most importantly, you will have timed your speech

so that you never have the embarrassment of going over your allotted time.

All presenting techniques must be practiced and most scientists would rather do science than practice speaking. However, developing the type of speech-giving persona which suits you only has to be done once. Then it is yours forever, and you can get back to what is important: discovering new ideas in science. So give your speech-giving self the practice it needs, and you can be a speech-making success for the rest of your life.

> *This above all: to thine own self be true.*
> *– Shakespeare*
> *Hamlet*
> *Act I, scene iii*

Preparation

Your slides are ready. You have chosen what to say. Now you must practice aloud going through your slides, always timing yourself. You may find you have no choice but to leave out some important material, so save those slides for some other use. Practicing aloud is the only way you can be sure you will stay within the allotted time. You never want to have the experience of having your audience grow restless and annoyed, or forcing the chair of the session to tell you to stop.

Once you have learned to control the volume and depth of your voice, speaking to a large audience is usually easier than speaking to an audience of 8–15 because the

anonymous character of a large audience helps you to lose embarrassment.

Two warnings

Experts advise us to avoid practicing by looking into a mirror – the person in the mirror distracts us and does not make a helpful audience. We are also warned that although practicing in front of a small group of other professionals or students is helpful, surprisingly enough practicing in front of one's family is extremely difficult and often not helpful.

Your Conference Persona

Now you are ready to practice your whole conference persona. One way to do this is to imagine that three walls of an empty room represent your audience and the fourth wall the screen behind you. Imagine the three walls are rows of interested scientists. Now tell them your story by explaining your slides to them. Glance only briefly at your slides on the screen behind you. Keep your body, as much as possible, turned toward the audience. Maintain eye contact with your imaginary audience, talk, move, and gesture. Invite yourself to feel comfortable as you tell your story. Last, remember to check your time. You are now forming habits for a lifetime of success as a speaker.

Practice your speech as if you are having a conversation with a friend. Use every technique you can think of to avoid a monotone or a repetitious, rocking rhythm. An audience enjoys hearing warmth in your voice. It is a sign you enjoy

science. The audience wants you to like what you do; you want the audience to like what they hear: A perfect fit for success. Your secret is to be loud, clear, enthusiastic, and slow, slow . . . slow – explaining your work as carefully and with as much excitement as you would like other scientists to use when they explain their work to you.

> *Wisely and slow; they stumble that run fast.*
>
> *– Shakespeare*
> *Romeo and Juliet*
> *Act II, scene iii*

ENDING ON TIME

Lewis Carroll (1866) in *Through the Looking Glass* warned '. . . Beware the Jabberwocky . . .' The lack of good timing of your presentation could be your Jabberwocky. Beware.

You will be given a certain number of minutes in which to speak. Typically this is 20 minutes, which includes time for someone to introduce you and time at the end for you to answer questions. Be prepared to accept that whatever length of time you are given it will not be enough to explain your research in full detail. However, it is vital that you stay within your time limit. Vital.

Nothing angers the audience or the organizers more than a speaker who goes overtime. Either the next speaker will have less time or the schedule of the whole conference will be delayed – and you, you, will be the Jabberwocky who caused it.

Here is the way to stay within an allotted number of minutes: First you must force yourself to be realistic about how much you can explain, slowly and carefully, in the length of time you are given. Perhaps you have valuable, lengthy results, which need explanation of procedure, background, and future possibilities. Too bad, too bad, but that is how it is: You are given a limited number of minutes. You cannot tell them everything. You will 1) choose what is most important, 2) display it in clear, uncluttered slides, and 3) explain each slide in slow, simple, easy-to-understand English. Racing through a bewildering amount of rapid data is the worst mistake a presenter can make.

YOUR FINAL WORDS

At the end of your speech simply say 'Thank you.' This is the best and kindest way to let the audience know that you have finished. Do not worry about ending a bit early. No one has ever been upset when speakers end early but they are easily upset by those who speak too long. Should you end early, there is no embarrassment: You will have more time for comments and the next speaker will appreciate your courtesy.

FIELDING QUESTIONS

Usually after your talk, there is time for questions and comments from the audience. Ideally during the question period, the chair will repeat questions or comments so that they are clear. But this is not always an ideal world, so if this doesn't happen, you ask the questioner to repeat the question so

that the whole audience can hear it – and so you can hear it again and have additional time to think. Keep your voice up at this time, listen intently, and step toward the questioner. Don't back away. Take your time. You are the speaker; you are in control here, not the questioner.

You do not need to fear this question period because, for some psychological reason, by the end of a presentation, the audience is instinctively on your side. They have come to identify so thoroughly with you and your science that they will come to your aid to protect you from strange or difficult questions. So depend on the audience and be ready to ask:

- if someone in the audience will help you answer,
- the questioner to rephrase the question,
- the questioner to come talk to you after the session,

or be ready to say:

- 'I do not understand your question, please explain,
- 'That is a good question; I will think about it,
- 'I wish I could answer that.

Remember this period of questions and comments may be valuable to you. By listening intently to what people in the audience say, you may get important insights for your future research.

Stand straight, smile, and look confident, for you have now developed the persona of a fine presenter. You have taught yourself to keep your mind on your desire to 1) tell your story, 2) communicate ideas, and 3) make science a little bit bigger

and better. You have learned to forget about yourself and concentrate on communicating with the audience. You are an accomplished and professional presenter.

> *Your own resolution to succeed is more important than any other one thing*
> *– Library cornerstone, Waynesburg College, Waynesburg, Pennsylvania, USA*

– 9 –

The Art of Napping at Conferences

How to nap at conferences and seminars without damaging one's reputation as a serious scientist is an important consideration for participants at conferences. Chapter 9 deals only with the 30-second to three-minute nap. Napping activities over this time limit, especially those that fall into deep sleep, are beyond the scope of this chapter.

During conferences, particularly international conferences, frequent short naps, interspersed with periods of wakefulness during a single conference session, appear not only likely to occur but possibly should be encouraged as a form of brain preservation.

The safest environment for a successful nap is within the setting of a large conference. Napping within groups of ten or less is a supreme challenge even to an inveterate napper and you should avoid napping in small groups until you have thoroughly studied this chapter.

First, before discussing techniques, a word about nodding: Nodding is that all-revealing jerky movement of the head

as you alternately relax muscular tension as you slip into sleep and then recover. This activity should be avoided: It is likely to cause a neckache and, worst of all, it will enable everyone to see that you are indeed napping. Using one or more of the techniques developed here, skilled conference attendees are generally able to avoid this revealing nodding or bobbing of the head and thus preserve the pretence of being awake and listening even when the eyes are closed.

Selection of a proper napping technique generally depends on from whom you are trying to conceal your activity: the speaker, people sitting beside you, or people sitting behind you. The latter, naturally, is the easiest to accomplish and usually requires only adequate head support to prevent nodding. A situation in which the conference members are seated in the round or in a horseshoe arrangement poses special problems and requires the full resourcefulness of the napper.

> *I am a man more sinned against than sinning.*
> *– Shakespeare*
> *King Lear*
> *Act III, scene ii*

Variations of successful napping techniques developed over the years include:

- The **DG**. The most time-honored napping technique, is the **DG** (dark glasses) technique. In this technique care should be taken to select the darkest lenses when preparing for

a conference. In addition, the glasses should be worn at the gathering prior to the talks so that the other conference goers will assume dark glasses are needed for your vision and not just a camouflage for napping. (One can oftentimes get insight into the reputation of the speaker by counting the number in the audience who are wearing dark glasses.)

- The **SE**. The **SE** (slit eyes) technique has been used successfully over the years but requires a degree of sophistication. Here, the eyes are not fully closed – a view of at least a miniscule portion of the white of the eyes must be preserved for this method to be successful. Eyelid fluttering must be carefully controlled and a general demeanor of fixed concentration should be maintained. Head support is optional.

- The **HOE**. The **HOE** (hands over eyes) technique is widely used and requires only a modicum of practice. A number of variations of the **HOE** are available:

  - The **HOF**. In the **HOF** (hands on forehead) variation, the eyes are concealed to simulate reading. If possible a spread-fingers position should be utilized since the closed-fingers position is, although it has certain advantages, a bit blatant. If you also choose to use decoy reading material, care should be taken to position it so that such material does not fall to the floor during the actual napping period, thus revealing your true activity.

  - The **HIH**. The **HIH** (hands in hair) variation is done with the head deeply bent, thus effectively putting the eyes on a horizontal plane where they are not observable except in the unlikely instance of people getting down

on their knees to peer up into your face. (Note that this variation can become dangerous if employed after the halfway point of a session because this mode is highly conducive to complete sleep.) Care should be taken that your head does not slip off its hand support since, once the head goes all the way down to the table, napping becomes public knowledge. Many people successfully use this variation by keeping a copy of the program conspicuously open in front of them.

– The **FOE**. The **FOE** (fingers on eyes) is a variation of the **HOE** activity in which it is permissible to close the eyes completely and keep them closed for the period of the nap. It is a convincing ploy, if you wear glasses, to put the fingers up under the glasses and hold the eyes shut. This has the added advantage of giving some head support. However extreme care must be taken not to nod or fall into a deep sleep and knock the glasses off.

> *He does it with a better grace, but I do it more natural.*
>
> *– Shakespeare*
> *Twelfth Night*
> *Act II, scene iii*

- **One & One**. The **One & One** is a recently developed technique, which unfortunately requires a great deal of practice. In this method the eye on the observed side (the side next to the people you most want to convince that you are awake) is kept open while the other eye is closed to obtain the maximum benefit from the nap. Some users

report difficulty with this technique because it requires a good deal of coordination.

> Just this month a field report mentions a new variation on the **One & One** in which the head is rested on the fist, which is supported by an elbow on the table. The cheek is then distended in such a way as to close the eye forcibly. The other eye remains open.
>
> An added benefit of this variation is that it gives the impression of extreme boredom. Consequently this offers great potential for recently initiated conference goers who desire to display a degree of sophistication in their napping technique. Not nearly as much muscular control is required as in the straight **One & One**. (Please note that if a napper closes the unfisted eye, the activity will no longer qualify as a **One & One**)

- The **DFM**. The **DFM** (diversionary finger movement) is a technique suggested only for veteran nappers who have a great deal of coordination. In this skillful activity, both eyes may remain closed but the fingers remain in motion. Props, such as pencils or pens, may be used but most common is for just the fingers to maintain a drumming movement on the forehead. Deep sleep represents a particular danger in this technique, and novices are warned against attempting it until they have many hours of successful conference napping to their credit.

- The **HTB**. The **HTB** (head thrown back) may be a useful technique if the speaker is either exceptionally boring or exceptionally profound. In this technique, the head is thrown full back as if the napper is contemplating the ceiling. The difficulty here is that a great deal of finesse must

be exercised in maintaining one's balance. In fact this position is not recommended unless the conference chairs have suitably high backs due to the severe injuries which can be sustained in the unfortunate circumstance that you fall backwards out of your chair.

> *Tempt not a desperate man*
>
> *– Shakespeare*
> *Romeo and Juliet*
> *Act V, scene iii*

As in all professional activities, in the art of successful napping certain things are to be strenuously avoided. Foremost among these is snoring. Snoring is widely considered to be a sign of deep sleep, and deep sleep automatically disqualifies a person from being considered a napper – although recently there has been some dissent on this view.

Please realize that other actions can betray you even after you have completed a successful nap. The worst is yawning. Yawning is unforgivable. Furthermore, looking around slyly after a successful nap to see if anyone has been watching is definitely bad form. Nodding is, of course, to be avoided. However, it is not as disastrous as losing muscular control so that the head rests upon the table or one falls out of the chair. (If the latter circumstance should ever occur it is considered best to pick yourself up and walk quickly from the hall.)

Veteran nappers will find they can be especially blatant about their napping by disarming observers with a well-timed, meaningless question after the speaker finishes. Developing a

personal repertoire of suitable questions is important but some universally used questions which you can pattern after include:

- 'In the long run, what, in your opinion, is the significance of the conclusions you have drawn on the field as a whole?'
  (If you decide to use this question, you must be the first questioner after the speaker has finished; otherwise some non-napper will have used it.)
- 'What exactly do you mean by . . .?'
  (Choose a word from the title or first sentence of the speech before you begin to nap.)
- 'How do you reconcile what you have told us with the research done by . . .?'
  (Here either give the name of the most famous scientist in the field or use a name no one knows.)

Good luck in your attendance at international conferences, and if, despite all the advice in this chapter on successful napping, you choose to remain awake throughout the talks, a highly satisfying activity besides listening is available to you. You can entertain yourself by watching the other nappers. If you then discover additional techniques for successful napping, please contact the author of this book so they can be considered for the next edition.

> *We are such stuff*
> *As dreams are made on . . .*
>
> – *Shakespeare*
> *The Tempest*
> *Act IV, scene i*

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Afterword

The world's 6 billion people today live in a total of some 200 countries, speak over 6000 languages, and use some 2,260 writing systems. Amazing that out of this plethora of riches, English seemingly offers the only current possibility for worldwide communication.

Perhaps when linguists resolve the intriguing but intricate relationship between language and thought, we may know the extent to which the use of English enhances, changes, or inhibits scientific thinking. At present we have little idea of what we gain and what we lose when we commit to communicating science in English. But the time for philosophic thought about the effect of becoming increasingly dependent on English for international communication has passed.

Like it or not, English has become the Rosetta Stone of science. Consequently if we are all to understand each other accurately, scientific English must become more direct and clearer than it is at present. This means not only do you have to try harder, but all native speakers when writing or speaking to an international community of scientists, must be willing to give up their colorful, regional, and often mysterious use of idiomatic English. The evolution of international, scientific English will be up to all of us, and in it may lie new, shared scientific discoveries for the benefit of the planet we love.

However, may we not become so engrossed in exchanging valuable scientific information accurately that we lose the patterns of thought, the excitement, the beauty in the stories, drama, poetry of all languages. These provide the nourishment that keeps good science alive, and, without them, science loses its vision.

> *Here, I hope, begins our lasting joy.*
> *– Shakespeare*
> *Henry VI, Part III*
> *Act V, scene vii*